

display cp

THE RAILWAY GAZETTE

Price: Two Shillings

FRIDAY, JANUARY 16, 1959

UNIVERSITY
OF MICHIGAN

Annually £5 by post

FEB 2 - 1959

When you study PRODUCTION

TRANSPORTATION
LIBRARY



think of R.T.B

The artist's fantasy reminds us of the importance of the product of the steel strip mills we pioneered. It also suggests flat and corrugated sheets and the laminations ever present in modern electrical products.

There is hardly a branch of industry that has not felt the benefit of our products.

RTB tinplate and sheet steel are of course world famous—equally vital to some industries are special heavily-coated sheets, continuous steel strip, and electrical laminations. For these—of which we are the largest manufacturers in Europe—we have evolved new high-efficiency steels, which we make and then roll down into strips and sheets, to be stamped into laminations for every branch of the electrical industry.

Richard Thomas & Baldwins Ltd.

RTB

There's a



difference

Top quality may not be quite so rare as the four leaf clover, but be sure of obtaining the best by specifying *Osborn* engineers' cutting tools. The range available includes almost every type of engineers' cutting tool, and these are manufactured throughout from steelmaking to finished product within the same organisation.

MUSHET BRANDS
ENGINEERS'
CUTTING
TOOLS

Twist Drills
Reamers
Milling Cutters
Lathe and Planer Tools
Toolholder Bits
Hand Chisels
Pneumatic Snaps and Chisels
'Hand & Heart' Files
Hacksaw Blades
Taps and Dies, etc.

Comprehensive stocks
constantly maintained

OSBORN

SAMUEL OSBORN & CO., LIMITED
CLYDE STEEL WORKS, SHEFFIELD.

FINE STEELMAKERS · STEELFOUNDERS · ENGINEERS' TOOLMAKERS

THE RAILWAY GAZETTE

A Journal of Management, Engineering and Operation
INCORPORATING

Railway Engineer • TRANSPORT • The Railway Pictorial

The Railway Times • Herapaths Railway Journal • RAILWAY RECORD.

RAILWAYS • ESTABLISHED 1835 • THE RAILWAY OFFICIAL GAZETTE

33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1.

Telephone: WHIttehall 9233 (20 lines) Telegrams: "Trazette Parl, London"
BRANCH OFFICES

GLASGOW: 139, Bothwell Street, C.2 Central 4646

NEWCASTLE-ON-TYNE: 21, Mosley Street Newcastle-on-Tyne 22239

MANCHESTER: Century Insurance Building, St. Peter's Square. Central 7667-8-9

BIRMINGHAM: 90, Hagley Road, Edgbaston Edgbaston 2466

LEEDS: 70, Albion Street Leeds 27174

BRISTOL: 8, Upper Berkeley Place, Clifton Bristol 21930

Annually £5 by post Single copies, Two shillings.

Registered at the G.P.O. as a newspaper. Entered as second-class matter in U.S.A.

Editor: B. W. C. Cooke, Assoc. Inst. T.

Vol. 110]

FRIDAY, JANUARY 16, 1959

[No. 3

CONTENTS

	PAGE
Editorial Notes	57
Reassembly of Parliament	59
The N.U.R.'s Design for Living	60
A Lesson from Germany	60
Rejuvenation in Ireland	61
British Railways Standard A.T.C.	62
Letters to the Editor	62
The Scrap Heap	63
Overseas Railway Affairs	64
Glass-Fibre Doors for Southern Region Passenger Stock	66
Problems of the German Federal Railway	68
Modernising Goods Traffic from Copenhagen	70
Strengthening Gillingham Tunnel, Southern Region	71
Electric Traction Section	73
Personal	77
New Equipment and Processes	80
News Articles	82
Contracts and Tenders	84
Notes and News	85

Behind Time

FOG, ice, and snow can play havoc with train running in a British winter. Unpunctuality in these conditions is accepted by the public. Travel by road is known to be worse, except when the train heating is defective, an increasingly rare occurrence, as older rolling stock is replaced by new main-line coaches and multiple-unit electric sets and by railcars on secondary and branch services. The delays caused by winter weather alone do not disguise the serious unpunctuality due to other causes. Except in the North of Scotland and in other areas under deep snow or in local fog, few passenger trains were reported to have been late last weekend and earlier this week, before the widespread fog on Tuesday night, simply because of the weather. There was much lateness on at least two main lines between London and the North attributed mostly to modernisation works in progress. The indications are that passenger trains, and especially express, of several Regions have been bad timekeepers for some months. Goods trains also presumably ran late,

though there seems to have been no surge of complaints from consignees. The weather in October last was not generally inclement or foggy. Nevertheless the highest percentage of expresses arriving on time during the four weeks to November 1, the latest period for which figures for all Regions are available, was 58, in the Western Region, compared with 44.4 in October, 1957. The Scottish Region was second, with 55.4 (58.7) per cent, followed by the North Eastern, 54.1 (49), London Midland, 52.6 (41.2), Southern 48.1 (52.8), and Eastern 37.7 (47.3) per cent. The amount of modernisation work varied. In the London Midland Region, where allowance was made by decelerations in the winter timetable, for electrification between Crewe and Manchester and other work on the main lines of the former L.N.W.R., timekeeping was better than a year before; 72.7 per cent of L.M.R. expresses arrived within five minutes of booked time, against 79.9 in the Western and 79.1 in the Southern Regions. No valid deduction can be made, but it seems that in the Regions which made the best showing, operating was better, or timetables were more skilfully drawn up to allow for delays caused by work on the line. Punctual arrival is an important selling point for British Railways. The present situation will have to be remedied if long-distance passenger traffic is to be increased in the face of more intensive competition from other forms of transport.

The Late Mr. J. W. Watkins

THE death of Mr. J. W. Watkins, at the age of 68, brings to a close not only an outstanding railway career, but also a long family connection with British Railways, London Midland Region, and its predecessors. Before becoming its General Manager, Mr. Watkins, like his father before him, had completed more than 50 years in its service. It was with a wealth of railway operating experience behind him that, in June 1956, Mr. Watkins became the first serving officer from British Railways to be appointed a member of the British Transport Commission. His views carried a great deal of weight with that body and his loss will be keenly felt there, as well as among a large circle of railway and other friends. His railway career was an example of the opportunity which the service afforded to a young man of personality, determination and ambition. It commenced in a small country station and ended at the highest administrative level. That achievement was the greater because during that career touch was never lost with his men or with his overriding love for railways.

Another French Main Line Electrified

INAUGURATION of electric traction, last Sunday, at 25 kV., 50 cycles, for both passenger and goods trains between Paris, Amiens, Arras, Douai, Lille, and Béthune and on several lines in the coalfield around Lens, in the Northern Region of the French National Railways, emphasises the relative ease with which this latest conversion was carried out. A brief account of the scheme is given on pages 75 and 76. The decision to electrify the Paris to Lille main line and associated branches, some 350 route-miles in all, was made in 1954. Progress was rapid, partly because of experience gained with the (Lille-) Valenciennes-Thionville-Strasbourg-Basle scheme, with which the Paris-Lille line connects. Electric traction is expected to save 300,000 tons of locomotive coal a year. The S.N.C.F. estimates that even in a coal-producing area such as the North of France, electrification at industrial frequency is financially justified when annual coal consumption on the line concerned is 640 tons a mile. On the lines now converted it was more than twice that figure in 1957. The resultant economies each year are expected to be 15 per cent of the capital cost of electrification.

Increased Traffic

MUCH additional traffic between the North of France and Paris should result from improved goods and passenger services. The former include coal trains of 2,000-3,000 tons, the operation of which at relatively low

cost will allow a reduction in rates and consequently lower prices in Paris of coal from the pits in the North. The reduction of the journey time between Paris and Lille, 160 miles, to 2 hr. 10 min. and introduction of some well-designed new stock for the business expresses should augment the already considerable passenger business, as will the faster service from and to the Northern suburbs of Paris. If, as is probable, it is decided soon to start on conversion of the section from Creil to Aulnoye and beyond to link up with the Belgian National Railways 3,000-V. d.c. system, the problem of dual voltages will again arise. The relatively ample loading gauge of the Paris-Lille line has meant freedom from the difficulty of clearances under bridges and through tunnels with which British Railways is faced in overhead a.c. electrification.

Overseas Railway Traffics

EAST AFRICAN RAILWAYS & HARBOURS approximate railway revenue for the month of November, 1958, was £1,547,000 compared with £1,559,000 in November, 1957. The total railway revenue for the 11-month period January to November was some £17,197,000 compared with £16,105,000 during the same period of 1957, an increase of £1,092,000. Operating revenues of the Canadian National Railways for November, 1958, amounted to \$56,098,000. Expenses, taxes, and rents totalled \$64,068,000, resulting in a net operating income deficiency for the month of \$7,970,000. In November, 1957, operating revenues were \$60,714,000; expenses, taxes and rents were \$60,999,000, and the net operating income deficiency was \$285,000. Canadian Pacific Railway revenue for November 1958, amounted to \$40,245,942 compared with \$41,910,169 in November, 1957. Railway expenses were \$34,992,784 (\$36,915,776) resulting in net earnings of \$5,253,158 (\$4,994,393). Aggregate net earnings from January 1, to November 30, 1958, amounted to \$31,546,121 (\$34,460,626). Salvador Railway Company receipts for November, 1958, amounted to colones 210,000 compared with colones 274,000 in November, 1957. The aggregate receipts from July 1, amounted to colones 934,000 (colones 879,000).

No New York Central—Pennsylvania Merger

THE announcement by the New York Central System that it has decided to suspend its studies of a possible fusion with the Pennsylvania Railroad brings to an end a remarkable proposal. Had it been carried through, it would have created a single railway system with a total route mileage of 20,560 and with total assets exceeding £1,960 million, and would have brought into being the eleventh largest corporation in the U.S.A. The greatest deterrent probably has been the realisation of the battle that would have to be waged against severe opposition so as to obtain the consent of the Interstate Commerce Commission to such a merger, which would no doubt have been regarded as establishing monopoly on such a scale as to infringe the Sherman Anti-Trust Law. Mr. James Symes, the President of the Pennsylvania has expressed his regret that a project offering such possibilities of economies in working has been abandoned. Mr. A. E. Perlman, the New York Central President, however, has now invited all the railway companies in the Eastern States to consider the consolidation of their lines into three or four systems of nearly balanced economic strength, which would both make possible working economies and yet preserve an element of competition.

Fairness in Booking Sleeping Berths

THE change in arrangements for booking sleeping car berths on British Railways necessitated largely by the anti-social behaviour of a minority of the public seems the best solution of a problem that dates back to the last war. In those years berths were very scarce, and many were held at the disposal of Government departments and the fighting services. From February 1, reservations will

be only made on payment of the full fees for the accommodation required. This is being done to allay the increasing irritation caused to genuine travellers refused sleeping car berths because of advance bookings which in the event are not taken up. Although intending passengers are sometimes unavoidably prevented from travelling, many advance bookings are reported to be made by people who have already made alternative reservations on different trains or days, a selfish precaution which is bound to cause disappointment and annoyance to others. The arrangements for refund are generous. Seventy-five per cent of the prepaid fee will be made to those who cancel before 4 p.m. on the day before that for which berths have been booked. No refund will be made if cancellations are made after that time except to applicants whose names have been placed on a waiting list, and from whom prepaid fees have been accepted pending the availability of berths. To these the fees will be repaid in full when berths do not become available.

Railway Factors in Port Working

THE contribution of railways to efficient port operation is mentioned in a comprehensive paper on the role of the port authority in shipping turnaround read on Monday to the Institute of Transport by Mr. F. D. Arney, General Manager of the Port of Bristol Authority. To ensure co-ordination between the port management and the railway, periodical conferences attended by representatives of the railway and other interests are held in most ports. At Bristol, for instance, the Dock Traffic Manager holds a daily meeting of representatives of rail, road, and barge transport, stevedores, quay and shed supervisors, and so on. This co-ordination has long been brought to a fine art in a good many British ports. Some of the best examples are the coal ports, where co-operation between railway and port traffic officers, colliery managers, and masters of colliers has cut both the ships' turnaround time and the wagon user to a minimum. In considering the layout of docks, Mr. Arney points out the need for a standage grid of sidings within easy reach of the berth. Such ready access is by no means always provided in rail-served ports overseas.

Glass-Fibre Carriage Doors

CARRIAGE doors are normally made with a timber frame, panelled on the outside in steel sheet. In the earlier days this panelling was also of wood. This form of construction has certain disadvantages; it is heavy, and the steel panel is liable to corrosion. Pressed steel doors were introduced by the former Southern Railway and widely used on suburban electric stock with the object of saving weight and production costs, but cast aluminium doors have been fitted on some recently built British Railways stock to overcome the corrosion problem. This type of door, however, is heavy and its initial cost is high. These problems are being resolved at British Railways, Southern Region, Carriage & Wagon Works at Eastleigh in the manufacture of carriage doors in polyester resin reinforced with glass-fibre. The process is described elsewhere in this issue. Besides being considerably lighter in overall weight compared with cast aluminium or timber frame steel panel doors, there is considerably more flexibility. During tests, the polyester resin door recovered immediately to its initial form after quite severe loading. Further advantages with this material is the simplicity of repair to local damage, and the reduced painting procedure. The over-riding advantages are the durability of the material and the elimination of corrosion.

Senseless Selfishness

THE misguided minority who have aggravated delays on the London Transport Underground and thereby caused inconvenience and hardship to thousands of their fellow passengers by refusing to alight from trains when asked, should by now have seen reason. Mr. B. H. Harbour, the Member of London Transport Executive

responsible for operation, has given full explanations, recorded in last week's and elsewhere in this issue, of the reasons for delays. It is gratifying that the older stock, failure of which has caused the bulk of the unavoidable detrainments, is being replaced as fast as possible. With the very frequent services run by L.T.E. during peak-hours, in the usually successful efforts to move passengers quickly and punctually, slight delay to one train may occasion unpunctuality to several more, and perhaps the need to turn a train round to maintain balanced working. Additional communications equipment is to be procured and installed at stations to help in explaining delays to passengers. That does not alter the need for passengers to detrain promptly when requested. Explanations can follow. The need is to eliminate the causes of delay, and for passengers to co-operate when delays occur.

British Railways Holiday Guides

NOW is the time to make plans for the coming holiday season, and once again the five guides published by British Railways under the title "Holiday Haunts" provide a wealth of information. Four of the volumes deal with England and Wales, and the fifth with Scotland, as in previous years. The price remains at 1s. 6d. a volume, which is excellent value for money. The standard of reproduction is as high as ever, with many attractive illustrations. Business reply postcards addressed to the Chief Commercial Officer of the Region concerned are again included—a most acceptable feature. There are small maps of particular areas and a folding railway map of the British Isles in each volume. Unfortunately, decisions made since the guides went to press, to close certain lines to passenger traffic, have made some maps out of date, or will make them so before the summer holiday season begins. The descriptions given of every notable resort and the comprehensive list of hotels and boarding houses, many of which are illustrated, add to the value of these well-produced booklets.

Diesel Locomotives for Argentina

AFTER several months' negotiations, the Argentine State Railways finally signed a contract on December 30, 1958, with Gruppo Aziende Italiane Argentine for the provision of 280 1,300-h.p. diesel-electric locomotives over some five years. Two hundred of these will be Argentine-built. The capital will be found outside the country and new factories erected. The total amount of the contract is stated to be US\$28,000,000 and 950,000,000 pesos, payable over nine years. The diesel engines will be built by Fiat S.p.A. in its Córdoba works, while the electric motors and generators will be supplied by Siam di Tella. Among other Argentine firms to take part is Cometsarsa, which has already reconditioned some steam locomotives for the General Roca Railway. The Italian firms represented in the consortium are: Breda Elettromeccanica e Ferroviaria; Compagnia General Eletticità; Ercole Marelli S.p.A.; Officine Meccaniche Ferrovie Pistoiesi; and Stabilimenti Elettromeccanici Riuniti Ansaldo S. Giorgio. Considerable importance is attached in Argentina to this transaction, as contributing to implementation of a policy of self-sufficiency in motive power for the railways.

Bulgarian 12-Coupled Locomotives

IN our issue of July 11, 1958, we commented on the withdrawal of the last 12-coupled steam tender locomotive in Western Europe; but considerable use still appears to be made of six-coupled-axle types in at least one region behind the Iron Curtain. A recent visit to Bulgaria disclosed that all three 12-coupled tank locomotive classes built for the Bulgarian State Railways over the years 1922-43 were still at work, and in the good state of repair characteristic of Bulgarian motive power, including the Simmering two-axle diesel railcars built in 1936 and 1940. The first two with six-coupled axles for Bulgaria was formed of the 10 Hanomag 0-12-0T engines built in 1922, now known as Class "45." All are still in service as

banking engines on the Trans-Balkan line, working in their original two-cylinder compound form. In 1931 came the 12 large 2-12-4T engines from the Cegielski works in Poland (Class "46"). These, too, were intended for, and originally worked on, the steeply-graded Trans-Balkan route. Today they operate mainly between Sofia and the Yugoslav frontier at Dragoman. In this service they work along with the six 2-12-4T engines built in Berlin by Schwartzkopff in 1943, to the same general design but with three cylinders in place of the two of the Polish-built batch. All 18 of these 2-12-4T engines are shedded in the Sofia area.

Reassembly of Parliament

PARLIAMENT reassembles on Tuesday after a somewhat longer than normal Christmas recess. Transport matters will be almost immediately aired, as on Wednesday the Transport (Borrowing Powers) Bill is down for its Committee stage and Third Reading. The Second Reading of this Bill shortly before Parliament adjourned provided an opportunity for a full-scale transport debate which was seized by Front Bench speakers on both sides of the House. The Minister of Transport & Civil Aviation, Mr. Harold Watkinson, used the occasion to announce certain decisions made necessary by the financial straits of the British Transport Commission, including an inquiry into the progress and future of modernisation of the railways. The Opposition tried to fix the blame for the fall in railway traffic, particularly freight, on the Government economic policy. It was not expected, therefore, that the later stages of the legislation increasing the permitted borrowings for deficits by £250 million and doubling total borrowings for other purposes, mainly modernisation, from £600 million to £1,200 million, would provoke further debate, especially as the Bill is unopposed.

The seriously reduced traffic receipts of the Commission for 1958, published during the Recess, no doubt will cause some Members to demand further information on the Commission's present position and activities. That traffic had been declining was revealed by the traffic figures published every four weeks, but the publication of the final figures showing a fall of £30 million in freight traffic and £8 million in passenger, a total drop of £38 million has emphasised the extent of the loss. The Opposition may now well ask, and with more apparent justification, as they did during Second Reading of the Bill, whether the additional £150 million to be voted to meet deficits until 1962 will prove sufficient. Since the 1958 deficit was estimated at £85 million a few months ago, traffic has declined further and the position has apparently further deteriorated, so this may now prove an under-estimate. Whether that is the case or not, even with the additional permitted deficit borrowings, the total available to meet the subsequent four years will be less than £200 million. It is well for the Commission to have a target date and a limited sum to draw upon to cover its losses, but it can be doubted whether these targets are realistic. Everything turns on the future trend of traffic, which in their turn depend on the course of business and on the speed with which modernisation proceeds.

Economies effected by curtailment in services cannot in themselves save the position, though higher productivity achieved through greater efficiency can make a valuable contribution. As was stressed during the recent debate on Second Reading, the danger is that the maintenance of adequate public services is threatened if measures intended to achieve economies are arbitrarily forced upon the British Railways without due regard being paid to public need. It may be that the Opposition will suggest that the recent sit-down strikes on London Transport may be related to the recent cuts in services which have caused so much disgruntlement among some passengers. This would probably be stretching the point unduly. The fact remains, however, that with every deterioration in services the fund of goodwill at the disposal of the Commission, never large, is drawn on further.

Should, as appears likely, the Opposition return to the

attack on Wednesday, no useful purpose can be furthered unless constructive proposals are made. Nothing is to be gained from sniping at the Government and blaming it for the Commission's plight so clearly demonstrated by the year's traffic figures. Should the sums voted prove insufficient, the voting of further sums would not be enough. Other action would be required. If all the permitted deficit borrowings are taken up, the Commission will have such a burden of indebtedness, carrying so great an interest charge, that it is hard to see how it can meet them and pay its way, even with the completion of modernisation. The inquiry into modernisation, being conducted by the Commission itself at the instance of the Government, includes in its terms of reference the examination of steps necessary to achieve the earliest break-even date. Until that inquiry is completed the less Parliamentary skirmishing there is over the Commission's affairs the better. A minor skirmish may be inevitable over the legislation now before Parliament, but once that is on the statute book it is to be hoped the transport industry will be given a respite from party politics and allowed to proceed with its essential tasks.

The N.U.R.'s Design for Living

THE National Union of Railwaymen has submitted proposals to a joint Labour Party-T.U.C. committee which now is examining transport policy. If accepted by the committee and endorsed by the party executive, these proposals will form part of the legislative programme of the next Labour Government. The proposals are as follows: the union wants a permanent Government subsidy for the railways and the restriction to local carrying of "C"-licensed road vehicles and their banishment from long-distance road journeys. The N.U.R. believes that the railways should function as a public service rather than as a commercial undertaking. Nevertheless, it does not propose that the Commission's losses should continue to be written off indefinitely and regardlessly by the Treasury. Some financial help should be given: for instance, interest on compensation stock might become a Government responsibility, or the Government might meet the cost of maintaining and improving the permanent way. The union agrees that some unremunerative lines and services must be closed, but is against the reduction of the railway system to a size incompatible with profitable operation.

It is always difficult to understand the grounds for the belief that, because something has been sold under forced conditions, the time may come when the full purchase price no longer need be paid. The N.U.R. appears to doubt that shareholders of pre-nationalisation railways would have received dividends as large as their present compensation payments if the railways had continued to be privately owned. It is pointed out that if a company is unable to meet its debenture commitments, a receiver is put in and the company goes into liquidation. Such an allegation fails to take into account an alternative procedure. When a commercial undertaking serving a useful purpose finds itself unable to continue its business profitably on its existing prices, it commonly raises charges. Moreover, in most industries labour cost rises are speedily reflected in higher charges.

Baldly, rates and fares throughout British Railways could be raised before a subsidy from the Government need be considered. The N.U.R. combats this course on the grounds that the public has a right to a cheap and efficient means of transport just as it has a right to a cheap and efficient Post Office and Fire Brigade. The objections to this argument are several. First, it is doubtful whether the public has a right to anything for which it does not pay, and, at present, the public does not pay for its railway system other than by way of user costs. It is possible that this objection will be over-ridden for the reason so commonly in use today, that anyone has a right to anything just because he wants it. Anticipating the re-statement of this *gaucherie*, it may be as well to point out that, far from getting its heart's desire, the public may

well finish up with a service as full of hidden charges as was many another essential commodity sold under a Labour régime. Secondly, it is meaningless to compare the railways with the Post Office and the Fire Brigade. Conditions of work and pay are entirely different on all three undertakings: also, the Post Office and Fire Brigade have to cope with nothing like the extensive capital costs and maintenance programmes constantly under way on all progressive transport systems.

The basic idea that the nation's railways can and must provide cheap and efficient transport for all is indisputable. But it is necessary to remember that what was cheap yesterday may be a giveaway price in terms of today's economy. The degree of cheapness of a commodity or service must relate to its place in the economic structure as a whole and to the amount by which its price has increased against the prices of other relatable commodities and services. The increase in rates and charges on British Railways has lagged a long way behind the accompanying rises in railway costs, including wages, and the advance in the general level of prices. The almost meaningless slogan of "cheap and efficient travel" often is accompanied by another equally banal. For some time now, it has been fashionable in certain quarters to assert that a nationalised transport system cannot be expected to pay its way, or that any transport system providing sufficient and reasonably-priced services for its customers cannot justly make a profit. It is time that the fallacy of this statement was exposed. Many large railway systems abroad not only cover their costs, but make good profits. To quote examples, South African Railways, a nationalised system now well under way with a massive programme of expansion and improvement, has been declaring profits unaided by Government subsidy for years; smaller African systems such as Nigerian Railways are able to show excellent financial results; the Canadian Pacific Railway, privately-owned, declares an annual dividend of 6 per cent by balancing the receipts of its various interests (the British Transport Commission also has other than purely railway assets); Canadian National Railways can counterweight bad years with good; Socialist India claims large financial rewards from her railways; the Swiss and Dutch national railways also either break even or declare a profit each year. All these administrations have to face continually-rising costs and extensive modernisation, and many wage constant war with road competition: it is hard to see why British Railways should be considered as occupying a conspicuously underprivileged position.

A Lesson from Germany

FROM the impressions of German Federal Railway given elsewhere in this issue by a member of the group of M.P.s who visited it last month there emerge certain matters of interest to those concerned with transport in Britain. Railways are nationalised in both countries, and in both are in grave financial straits, with their deficits being met by the State. Both seek modernisation as one answer, but the German railway administration, which labours under greater handicaps from statutory obligations, particularly in regard to charges, does not see in it the whole, or even the main answer. Its approach is somewhat different from the British. The Germans are highly cost-conscious, and do not consider that the railways with or without modernisation can obtain their economic share of the traffics unless something is done to equalise rail, road, and inland waterway costs. They are not content to trust in the free play of competition which is Government policy here, though the British Railways are in a more favourable position as regards rates.

Restriction on road transport and higher taxation of motor fuel, and a special tax on the ancillary user, on a ton-mileage basis, have all been introduced in Western Germany in the last year or so. But the railways still lose traffics, and the deficits mount. This is probably because no formula has yet been found for equating road and rail costs. Partisans of road transport can argue that only a fraction of what the road user pays goes to road mainten-

ance and construction. His railway counterpart can retaliate that the road user makes no contribution towards the historic cost of the roads or their renewal as must the railway user. There may be room for further inquiry into the relative contributions of each and some adjustment be found necessary, but restriction and higher taxation on road transport can never be the final answer to the rail and road problem. In seeking a solution in this direction the German railways may be inviting disappointment.

More likely the answer is to be found, at least in part, in greater flexibility in charging and relief from the statutory obligations which they also seek. Here both systems share common handicaps. Although British Railways can now charge within a ceiling, they have not that complete freedom which enables them with certainty to discourage the unprofitable traffics which those who operate their own road fleets pass over to the railways when it suits them, and which the railways must carry. This conflict between public service and commercial operation confronts both railway managements. In Britain there has been some whittling away of the public service obligations, though many remain, even to the point of evoking Parliamentary questions as to whether the provision of adequate public services can now be ensured. The German railways ask that where, for public service reasons, they are obliged to act otherwise than would be the case if the economic yardstick were applied, they be relieved of financial responsibility. There is much to be said for this, and certainly a great deal is demanded of the British Transport Commission which no commercial concern would be expected to undertake. In this respect a balance needs to be struck between legitimate responsibilities to the public and commercial requirements. It does not seem that in either case it has been. In both it may be that politics weigh too heavily upon the railway administrations. The German railways are even closer to the State, and suffer correspondingly more from this, but the tendency in this country also has been towards greater ministerial interference in charging policy and encroachment on managerial responsibility. Both are undesirable.

It is understandable, therefore, that in both countries the cry goes up to keep transport out of politics. But in Germany, where industry is affected by them more than here, there is no demand either for renationalism or denationalisation. Both the main political parties seem content to leave the railways as they are without extending their activities beyond actual railway operations. There is no talk of integration or co-ordination, planned transport system, or the like. The aim of the German Federal Railway management is to operate its system with technical efficiency, freed from unreasonable public obligations and on an equal footing with its competitors. In this commendable objective there may be a lesson for both Government and Opposition parties in Britain.

Rejuvenation in Ireland

NO time has been lost by the Board of Coras Iompair Eireann in taking advantage of the greater freedom in charging accorded by the Transport Act of 1958 to take on measures to capture traffic and to achieve financial equilibrium, as laid down by the Act, within five years from April 1, 1959. A forthright and lucid account of what has been done since he assumed office last September, is in progress, and his plan was given earlier this week by Dr. C. S. Andrews, Chairman of C.I.E., in an address to the Dublin Chamber of Commerce.

The situation of the railways in the Republic of Ireland was greatly changed during the past year not only by the Transport Act, but by the division between C.I.E. and the Ulster Transport Authority of the Great Northern Railway. C.I.E. was almost simultaneously accorded greater freedom in charging; placed under the obligation to pay its way by the Spring of 1964, with Government assistance to the extent of £1,000,000 a year until 1963, to cover any financial losses; and faced with the problem of working the G.N.R. lines in Republic territory. The Board of C.I.E. was reconstituted, as described in our issue of September 12.

The obligation placed on C.I.E. by the Transport Act is regarded, Dr. Andrews points out, as a challenge. This is to be met in three principal ways: by making use of the new commercial freedom; by application of the most up-to-date methods of management; and by more efficient operation, including elimination of "patently uneconomic services." In capturing more traffic, the removal of restrictions on commercial freedom will make possible more effective competition. The Board has set a target of an increase of 10 per cent in revenue. Commercial activities directed to attaining this include a selling campaign. It is intended to offer "package deals" to firms to carry all their traffic on a contract basis, which is made possible by the flexibility in quoting rates now enjoyed. To encourage business and industrial concerns to use the specialised skills in planning transport and the equipment made available by C.I.E., and so, as its Chairman explains, to deviate the dissipation of effort caused by attempts by firms to operate so complete a matter as transport for themselves, an Advisory Section is to be set up to provide a service to business managements in the Republic. It will be required to adapt public transport as far as possible to meet each user's needs by use of containers or other equipment and techniques.

The element of risk in a revolutionary change in rates, he emphasises, must be accepted, though the change is a delicate task which must take some time. The new rates policy is intended to achieve this. The reason why many firms forsook C.I.E. and its predecessors in the past, he maintains, was the unsound basis of charging, which outweighed convenience of service. With the new basis of charging by contract for a firm's entire transport service, C.I.E. is confident of regaining the lost traffics. Development of a new commercial policy, besides taking time, will require additional, highly skilled staff, who will have to be selected and trained.

As regards passenger traffic, the road services are stated to be good, though they are to be improved as opportunity offers. The improvement in railway services brought about by introduction of diesel locomotives and railcars has helped to retain traffic. He indicates that his Board's aim is to improve further the general facilities. A start has been made on improving the cleanliness of rolling stock and stations. It is emphasised that there is room for further development of the home tourist business by means of excursion and party travel facilities. The importance to C.I.E. of the overseas tourist trade has long been appreciated and appropriate measures taken.

Training for management is an important feature of the programme for improving standards, which involves re-adaptation of the organisation. "Contrary to popular belief" the Chairman maintains "the senior managerial and technical staffs available in C.I.E. are numerically quite inadequate for the proper management of an undertaking of such size and complexity."

After referring to the re-equipment of C.I.E. with diesel motive power and with new rolling stock, to the better working thereby achieved, and to the economies realised, which was done mainly under the direction of Mr. O.V.S. Bulleid as Chief Mechanical Engineer, Dr. Andrews states that improved methods of maintenance and the elimination of some remaining defects by the manufacturers will provide better availability of locomotives and reliability of service. It is proposed to extend diesel traction to the C.I.E. portion of the former G.N.R. "Our ultimate object is to eliminate steam entirely from the undertaking." Other measures to improve plant and equipment include establishment of a Development & Operational Research Unit to cater for all branches of the undertaking. One of its tasks will be the development of containers for internal, cross-Channel, and Continental traffics, for which great scope exists.

No sections of railway are to be closed if they can be made to pay, and the losses on some branches could be reduced by further economy measures and by securing more traffic from local traders. Nevertheless, services must be withdrawn from lines which are hopelessly uneconomic, such as the Harcourt Street to Bray section, recently closed.

British Railways Standard A.T.C.

MANY details in the British Railways standard design of A.T.C. are discussed in the paper "Automatic Train Control—The British Railways System" read to the Institution of Locomotive Engineers earlier this week by Mr. J. H. Currey, Signal & Communications Development Engineer, British Railways Central Staff, British Transport Commission. A great deal of research and testing was carried out on the design in interpreting the original basic specification by the Railway Executive in 1951, which laid down (a) that the link between track and vehicle should be inductive, (b) the equipment on the vehicle should be of the type used on the former Great Western Railway and still used in British Railways, Western Region, and (c) that no visual indication was to be provided. The first requirement was followed. The departure from the other two was the subject of editorial comment in our issue of February 21, 1958. Mr. Currey, who was consulted at an early stage, described the basic features in his paper read to the Institution of Railway Signal Engineers, last February, the salient points of which were reproduced in an article in our February 14 issue. In his more recent paper he concentrates chiefly on what concerns locomotive engineers, the British Railways standard design as adopted for steam locomotives, which are being fitted with it in large quantities.

The psychology of the driver and motorman was given much attention in deciding the merits between different combinations of visual and audible warnings before making final the system now adopted. One part of his paper is devoted to explaining the reasons for selecting a vacuum-operated horn, accompanied by gradual automatic brake application, when the locomotive or railcar approaches a distant or multiple-aspect signal at caution, and the ringing of an electric bell in the cab for 2 sec. when approaching a distant signal in the clear position. By limiting the audible sounds to these two completely distinct signals, it is intended to cause an automatic though unconscious response in the brain and so to reduce the possibility of confusion at times of stress. In the B.R. standard system a visual indication has been added. A yellow-and-black spoked dial remains visible to the driver after the horn and brake application sequence has been manually cancelled, as a reminder that a warning has been received and acknowledged. This visual indicator, as Mr. Currey points out, is provided as a permanent reminder in case the driver has heard, but not registered, the audible signal. It is not intended to be observed continuously at the expense of watching signals. The G.W.R. design nevertheless has a long safety record, though it did not originally include such a visual indicator.

From the constructional point of view the paper shows that in the B.R. design, maintenance has been simplified to the greatest possible extent. In the case of the plug and socket at each end of the flexible five-core cable connecting the bogie-mounted magnetically-operated receiver, 5 in. above rail level, and its junction box on the main frame, various types were tested over a period of several years before the present design was evolved. The policy has been to ensure that any part liable to day-to-day maintenance is capable of being changed and does not need to be maintained on the locomotive itself. This applies more particularly to items such as the spring-loaded ball in the vacuum equipment non-return-valve cartridge and to all electrical equipment, where any piece which might fail to function properly can be replaced without disturbing the electric wiring, because of the use of jacking strips wherever possible. All equipment is designed to function in conditions of vibration, shock, heat, smoke, steam, and extreme weather. Aluminium alloy, stainless steel, and synthetic rubber have been used extensively.

The standard design incorporates a transistor oscillator employed on steam locomotives to supply a.c. power to a transformer and rectifier to achieve the high voltage d.c. required as a safety measure by the reset coil on the receiver. This is believed to be the first general use for railway signalling in this country of the transistor, which

has the qualities of small size, no delicate parts liable to be disturbed by shock, and high electrical efficiency. Mention is also made by Mr. Currey of three safeguards designed to obviate any possibly serious effects of failure of equipment. If the track-mounted electrically-operated inductor fails, the driver receives audible warning when approaching distant signals showing either caution or clear. If failure of the equipment on the locomotive occurs, there is no danger of a prolonged hold-up on the line, as the driver can operate an isolating valve, which is normally sealed, so as to proceed under visual signalling conditions only. Unauthorised tampering with the driver's control unit is discouraged by the sealing of screws which hold in place the removable side cover.

Letters to the Editor

(The Editor is not responsible for opinions of correspondents)

Lancashire & Yorkshire Livery

January 2

SIR,—It is indeed good to see the illustration on page 535 of your issue of October 31, 1958, of the Lancashire & Yorkshire 2-4-2 tank engine restored to its original colour scheme. It does seem a pity, however, that the well-known and familiar "Lancashire & Yorkshire" has been omitted from the tank sides.

As far as I can remember it is well over 50 years now since the original practice of a plain tank and small initials L. & Y. on the tenders was abandoned. There must be very few people today who can remember this clearly.

Yours faithfully,

P. BARDSLEY

Withdean, Brighton

L.M.R. Main-Line Passenger Services

January 7

SIR,—Has the London Midland Region been guilty of defeatism? I have in mind the wholesale deceleration of services on the main line of the former L.N.W.R., as a result of which many trains, still designated "XL or special limit," have been given schedules but little superior to those of the immediate postwar era. There is no need to stress the complexity of the factors underlying unpunctuality, but is a sluggish and unenterprising timetable the best way of curing this malady? Permanent way checks of varying severity were certainly not unknown in the 1935/39 heyday, and yet the high-speed trains operated by the L.M.S. during that period had an excellent time-keeping record.

In the course of sporadic checks carried out at Euston since the start of the slow-down, I have not noticed much difference in the picture presented by the arrival indicator. On a recent Tuesday evening, when the weather was admittedly unpleasant but had not added fog or snow to its repertoire, I noted in the "minutes late" category a 45 (actual) with a 40, a 35, and a sprinkling of 15s still to come. The only train to get through the ruck was the "Deltic"-hailed 2 p.m. from Liverpool, which came in one min. late on its new scheduled arrival time of 5.54 p.m.

Modernisation of this trunk line is an urgent priority, but surely the precautions taken in this instance run counter to the Greek maxim "nothing in excess"? Let us have a little more speed, and so give keen engine crews, of whom there are still a few left, a chance to show their mettle and thereby benefit the general working.

Yours faithfully,

J. E. L. SKELTON

9, Keble House, Manor Fields, Putney Heath, S.W.15

[The winter passenger service of the London Midland Region, which incorporates decelerations to allow of electrification and other work on the former L.N.W.R. main line, was the subject of an editorial article in our issue of October 3, 1958.—Ed., R.G.]

THE SCRAP HEAP

Off the Rails

A large postal packet arrived in the Isles of Scilly addressed to the "Station-master, British Railways, Scilly Isles Station." The packet was from a tourist agency.—From *"The Daily Telegraph."*

Ticket Books on the Waterloo & City

The Waterloo & City Railway has issued a gaily-coloured handbill notifying that, for the greater convenience of passengers, books of tickets are now issued. That is a new departure to be commended, as it saves the bother of arming oneself with a supply of coppers. The terms on which these books are offered do not, however, commend themselves to common sense. A book of 12 single journey tickets costs 2s., but you can get six return tickets for 18 pence and we imagine there are very few people who would care to pay 33 per cent extra to have tickets in book form.—From *"The Financial Times"* of December 17, 1898.

End of 0-6-2 L.N.W.R. Tank Class

The last of 300 Class "2" coal tank engines built at Crewe Works by the L.N.W.R. between 1881 and 1897, No. 58926, is being broken up.

Built to the design of F. W. Webb, these engines were used mainly for working heavy coal trains in the colliery district of South Wales and elsewhere. From 1914 onwards many were fitted with apparatus for working pull-and-push trains.

Number 58926 was built early in April, 1887. It has been re-numbered on three occasions—originally L.N.W.R. 1054, then L.M.S.R. 7799 in March, 1926, and finally British Railways, London Midland Region, 58926, in September, 1949.

The two internal cylinders were 17 in.

bore by 24 in. stroke, boiler pressure 150 lb. per sq. in., and the coupled wheels 4 ft. 5½ in. diameter.

The Polite Art

Missionaries of good talk are busy in Britain and have banded themselves together in the Conversing Travellers' Association. The sponsors of this body began, they admit, with doubts as to whether modern society has "sufficiently progressed along the path of evolution" to allow us to talk "sensibly and quietly among strangers and even to individual strangers while travelling." . . . That is not to discount the mutual pleasure that arises between conversationalists and listeners who are prepared to play fair and not to struggle for monopoly. Where time is not short . . . much of permanent value may be learnt in this most agreeably verbal way. So, if luck held, might a long day's journey in a train become a lasting memory. And, yet, the faint hearted may continue to hide behind their newspapers.—From *"The Times."*

Radiating Cheerfulness

A London bus inspector, Mr. J. Johnson, of Bethnal Green, who "radiated cheerfulness" at one o'clock in the morning, has been praised for helping a group of railway passengers reach their homes when they arrived late at Kings Cross Station after normal bus and Underground services had stopped for the night. Their train from the North had been delayed, but when they reached Kings Cross, London Transport, in accordance with a permanent arrangement with British Railways for emergencies such as this, had arranged a special bus to help them get home, via Liverpool Street, Waterloo, Charing Cross, and other focal points.

A passenger who was conveyed by this special service has written to thank L.T.E. for its foresight and initiative in providing transport and has added his appreciation of the "splendid work" done by Inspector Johnson. "He was a model of courtesy and helpfulness," he states. "He travelled round with the bus, putting everyone off at the most useful spots for getting to their particular destinations and radiating cheerfulness. It was a good show."

Off-hand Passenger

Lost in the rush hour on the District Line—one artificial hand.

The owner, a man on a crowded City-bound train, got off at Aldgate East station and did not realise his hand was missing until he came to give in his ticket.—From the *"Evening Standard."*

Better than Llanfairpwllgwyngyll-gogerychwyrndrobwillandysiiogogoch

A girl in Honolulu, Hawaii, went for a job. The boss said, "What's your name?" She said, "Gwendolyn Kekino."

"Is that your full name?" asked the boss.

"No," she replied.

"Give us your full name or you won't get the job."

Gwendolyn asked her union, should she? "Go ahead," they said.

"My middle name," she said, "is Kuuliekailialohaopiilaniwailaukekoaiiumaheihiekaaloonaonoapiikea."

She didn't say what it meant.—From *"The Railway Review."*

Peak Period

To rise a little earlier

To catch a bus or train

Would give that bit of comfort

You can't find in the strain

Of the rush hour in the morning.

And the crush-hour home at night;

To travel a half-hour later

Would save you many a fight

For a bus at the request stop

Or a seat upon a train,

If it's not a fight, a scramble,

For the local or the main.

Then the "Crush Hour Committee"

Still does its best to find

A solution to this problem

By keeping some behind.

Perhaps our British Railways

Will also have a bash

And offer cheaper tickets

Saving early birds some cash.

The solution is elusive

Until we change our ways,

And spread the load for Transport

For work and holidays.

Holidays in May or June then,

With cheaper fares mid-week,

Will give us longer days when

To miss the crowds we seek.

Travel earlier or later—

Not 'tween 5 p.m. and six,

Nor between June and September—

Will help transport in its fix.

H. H.



Recently sent for breaking up, the last of 300 Webb Class "2" coal tank engines built at Crewe Works, L.N.W.R.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

NEW ZEALAND

Kioreroa Deviation

A short deviation on the North Auckland main line about two miles south of Whangarei has eliminated a long $7\frac{1}{2}$ -ch. radius curve and reduced distance by 42 ch. The deviation, 74 ch. in length, passes through a new cutting with a maximum depth of 110 ft. and is laid on a curve of 30 ch. radius. It replaces 1 mile 36 ch. of the old line, which passed around the toe of the hill. An approach curve south of the deviation has been eased from 10 to 16 ch. radius. Kioreroa Station, an unattended halt on the old line, has been closed, but three-quarters of a mile of the old line, between Kioreroa Station and the main line, has been retained as a siding for access to Kioreroa Wharf.

INDIA

Diesel Locomotives

The Government has announced that by the end of the second Five-Year Plan period the railways are expected to have in service 125 main-line diesel locomotives and 99 shunters on the broad gauge, and 20 general-purpose and six diesel shunting locomotives on the metre gauge. There are stated to be at present 68 broad-gauge, 26 metre-gauge, and eight narrow-gauge diesel locomotives in service.

Catering for Heavier Coal Traffic

Partial doubling has been approved of the Bina-Bhopal section of the Central Railway and the Anuppur-Katni

section of the South Eastern Railway, an aggregate length of over 104 miles. The work is necessitated by the increase in traffic expected from higher production in the Central India coalfields.

Of the Bina-Bhopal section 38 miles will be doubled, from Bhopal to Salamatpur, Pabai to Bareilly 11.75, and Bina to Bina Bridge. Of the Anuppur-Katni section, it is proposed to double fully between Anuppur and Sahdol, and partially between the Sahdol and Katni section, 40 miles.

Awards for Punctuality

Improvements in punctuality of trains have been achieved in the Bilaspur area of the South Eastern Railway, as the result of a scheme introduced at the beginning of 1958. During September, punctuality in the area was a record. This was improved upon during the first three weeks of October.

Under the scheme, drivers and guards of passenger trains are grouped together in teams working on common links. The control room maintains a running record of the scores of each team, and on the basis of daily scores a monthly average is worked out. Cash prizes are awarded to the team scoring the highest score in a given month. There are 37 such teams in the Bilaspur area.

The Railway Board has commended the punctuality award scheme to all other railways.

Manufacture of Railway Stores

Indigenous manufacture of railway stores, at present being imported, were discussed at the fourth meeting of the Indian Railway Equipment

Advisory Committee held recently in New Delhi. The committee members include representatives of certain central ministries, engineering and manufacturers' associations, the National Small Industries Corporation, and manufacturers of railway equipment.

The Deputy Railway Minister, Mr. S. V. Ramaswamy, expressed satisfaction that the purchases made by the railways from indigenous manufacturers had gone up from Rs.68 crores in 1951-52 to Rs.130 crores in 1957-58. During the latter year, he said, purchases amounting to Rs.45 crores had to be made from abroad of items of stores not produced in India or in short supply.

A booklet concerning a rough estimate of future stores requirements is stated to be in preparation.

CHINA

Rail Connection with Foochow

The last rail was laid on the Nanping-Foochow line on November 26, affording railway communication with the important seaport on the coast opposite Formosa.

New Construction

Construction has begun of a 160-mile branch from the Shanghai-Canton main line to the port of Wenchow, between Shanghai and Foochow.

Work is proceeding on the trunk line from Lanchow to Lhasa. The first section, from Lanchow to Sining, 110 miles, is expected to be completed in April, 1959. The line has been surveyed as far as Changtu, 570 miles from Lanchow. Changtu is on the Tibetan plateau, 11,000 ft. above sea level, and at the foot of the Tangla mountain range.

Doubling of Main Line

Double-tracking has now been completed on about 600 miles of the Peking-Canton Railway, which has a total route length of 1,445 miles. The Tientsin-Shanghai line, 830 miles long, is also being doubled, and about 50 miles has been completed up to the present.

BRAZIL

Delivery of Diesel Locomotives

The Rede De Viacao Parana-Santa Catarina took delivery of 30 diesel-electric locomotives in December. They were ordered from the International General Electric Company of Erie, Pennsylvania, and are of the universal "U12B" type. The railway operates between the interior and the port of Paranagua, which is the second largest coffee-exporting port in Brazil. Some of the country's principal exports are shipped through Paranagua, including



Universal-type diesel-electric locomotives under construction at the Erie factory of the International General Electric Company for the Rede de Viacao Parana-Santa Catarina

coffee, herva-mate (Brazilian tea), pine, plywood, wet salted hides, bananas, earthenware, and paper.

A total of 88 universal-type locomotives have now been delivered or ordered by various Brazilian railways in the past 18 months. At the present time, the Parana-Santa Catarina has eight 64-tonne locomotives which were placed in service in 1947 and operate between Paranagua and Curitiba, and five 1,600-h.p. locomotives.

Until recently, most of the locomotives in use on the Parana-Santa Catarina were steam-operated. In 1956, they hauled trains carrying a total of 812,700,000 ton-km. of freight. The diesel locomotives are expected to increase greatly the capacity of this line and also its speed of operation.

Locomotive Deliveries

Thirty diesel-electric locomotives were delivered recently, the last of the 195 purchased in U.S.A. In November, three electric train sets, the last of the 200 ordered from Metropolitan-Vickers, with mechanical parts by Metropolitan-Cammell, arrived in Rio for the Central of Brazil suburban lines.

UNITED STATES

More Merger Proposals

One of the latest of many proposals for mergers is that of the Norfolk & Western and Virginian Railroads. These two lines serve mainly to carry coal from the West Virginian coalfields to the sea, but in the case of the N. & W. with important routes to as far west as Cincinnati and Columbus, Ohio. Both have fared reasonably well during the recession. The net revenue of the Norfolk & Western for the first nine months of 1958 was \$27,265,911 and that of the Virginian for the same period \$8,383,312.

Addition of the Virginian's 608 route-miles to the 2,132 miles of the N. & W. would make a railway of 2,740 miles with total assets exceeding \$900,000,000. The Presidents of the two lines consider that a merger presents attractive prospects. Substantial economies might be effected by routing traffic interchangeably, and by joint use of the most favourably graded lines and modern yards of the two systems as well as of motive power and wagons.

Tax Equality for Railways

The Kansas City Southern and Missouri Pacific Railroads have won a major victory in their fight for tax equality in Kansas. In Cherokee County, which was taken as a test case, both railways paid the county taxes under protest, but sued for recovery, claiming that the valuation of their property had been assessed at 60 per cent for taxation purposes, whereas all other property in the county had been assessed at 21 per cent.

After the County District Court had

upheld these valuations, the railways took their case to the State Supreme Court, which has reversed the lower court ruling, holding that the dispute has a valid basis, and ordering a retrial.

The Supreme Court opinion, which was unanimous, was expressed in strong terms, the difference between the assessment ratios of railway and other property it stated, being so excessive "as to constitute a fraud and a discrimination."

The State of Kansas may feel useless to fight the case and may attempt a negotiated settlement. Further developments are being watched with interest by other U.S.A. railways. In many States the scale of railway taxation is regarded as excessive.

ITALY

Railway Strike

During the recent 24-hr. strike throughout Italy by railwaymen of the three Italian transport trade unions, it proved possible to run certain main-line trains with the help of volunteers and railway troops mobilised for the purpose. Several international services were operated but with considerable delays. Dislocation of services generally was severe. The electric power supply was affected, as 80 per cent. of the staff of the railway-owned power stations struck.

SWITZERLAND

Rhaetian Railway Season Tickets

The Rhaetian Railway is issuing special season tickets to people engaged in winter sports in the Canton of the Grisons. Tickets cover the Davos line from Jenaz through Klosters and Davos to Filisur, the main line from Filisur to St. Moritz, the Bernina Line from St. Moritz through Pontresina to Alp Grüm, and the branches from Samedan to Pontresina and from Bever down the Lower Engadine to S-chanf.

The charge is 28 francs for a period of eight days, 42 francs for 15 days, and 56 francs for 22 days, which relative to the normal fares over the Rhaetian line is reasonable. Each ticket must have attached a photograph of the holder.

Swiss Federal Locomotive Development

In preparation for the fast lightweight train push-and-pull train services mentioned in the July 11, 1958, issue, 18 Bo-Bo locomotives of the Re 4/4 type, Nos. 409 to 426, are being adapted in the workshops at Zurich, and are taking the numbers 10009 to 10026. Each conversion takes about three weeks. The first of the push-and-pull trains of the new standard formation has been operating since December 3 on the Berne-Lucerne-Zurich service.

The first 25 Co-Co locomotives of the 6,000 h.p. Ae 6/6 series, designed primarily for service over the Gotthard

main line, are now in service, numbered from 11401 to 11425. Each bears the name and emblem of a Swiss canton, and each has been the subject of a naming ceremony, followed by the working of a special train carrying schoolchildren of the canton and other invited guests, to a total to date of over 30,000 people, for a lengthy journey which in most cases has been over the Gotthard main line. The further series of 25 of these locomotives to be built is to be named after the principal towns of Switzerland.

First Class Coaches

There are now very few six-wheel and four-wheel passenger coaches on the Federal Railways which include first class accommodation. These will be withdrawn from service shortly, so that all first class travel will be in bogie vehicles.

Federal Railways Completely Electrified

The conversion of the 7½-mile single-track standard-gauge branch line between Oberglatt, on the Zurich-Schaffhausen main line, 8½ miles north of Zurich, and Niederweningen in the west, decided on recently, marks the completion of the electrification of the Federal Railways, except for five short lines of local importance connecting Switzerland with Western Germany.

FRANCE

Holiday Traffic from Paris Termini

The number of passengers departing from the Paris main-line termini during the peak holiday months of July and August, 1958, showed an overall increase of 0.77 per cent in comparison with 1957; the number of regular and supplementary trains, however, showed a slight decrease, of 0.39 per cent. The effects of the Brussels Exhibition and the Lourdes Centenary celebrations were clearly shown by a 4.03 per cent increase in traffic out of Paris Nord and a 4.7 per cent increase in the Paris Austerlitz departures. Paris Lyon also showed a rise of 3.46 per cent. The other termini recorded moderate decreases.

AUSTRIA

Improved Connection with the West

As from May 31, 1959, a new night fast train is to operate seven times a week between Vienna and Zurich, covering the distance in 13 hr. 7 min. westbound and in 12 hr. 56 min. eastbound, compared with an average of 15 hr. 45 min. for the present best fast trains between the two cities. The new train will be called "Wiener Walzer" (Vienna Waltz). From the same date, the timing of the existing "Transalpin" railcar connection between Vienna and Zurich will be reduced from 11 hr. 38 min. westbound and 11 hr. 35 min. eastbound, by 1 hr.

Glass-Fibre Doors for Southern Region Passenger Stock

Polyester-resin glass-fibre laminates produced at Eastleigh Carriage & Wagon Works

IT is normal practice to make railway carriage doors with timber framing panelled on the outside in steel sheet. This form of construction has certain disadvantages in that it is heavy and the steel panel is liable to severe corrosion as a result of ingress of moisture from the droplight and from condensation.

With the object of saving weight and production costs the former Southern Railway introduced a pressed steel door which has been used, particularly in suburban electric stock, in large numbers. To eliminate the corrosion difficulties of steel, aluminium doors have been fitted to some extent on recently-built British Railways stock. This type of door has, however, some disadvantages from a weight and interior finish point of view, apart from its high initial cost. In an effort to resolve these problems experimental work was initiated at British Railways, Southern Region, Carriage & Wagon Works, Eastleigh, in the manufacture of carriage doors in polyester resin reinforced with glass fibre.

In using the method of forming polyester-resin glass-fibre laminates by the single mould wet lay-up process, doors have been produced with characteristics superior to those of the orthodox type.

Materials

Polyester resin is used for the manufacture of the doors, and is reinforced by glass fibre of the chopped strand mat type weighing 2 oz. per sq. ft. Where additional tensile strength is required and for filling sharp corners, rovings of glass-fibre in continuous strands are used. Tensile strengths of 30,000 lb. per sq. in. and over can be obtained by this method.

The polyester resin is obtained in liquid form, and will not harden in this state. When prepared for use, a catalyst is added to initiate the chemical reaction necessary to solidify the resin in the completed mould. This reaction, or polymerisation, is slow at room temperature and an accelerator is added to the resin to reduce production time. A colour pigment is also added to the resin to give the Southern Region standard green finish. The type of resin used is fire proof.

Master Pattern

In the development of the process at Eastleigh Works a master pattern corresponding to the required inside and outside form of the door was prepared in resin-bonded laminated timber. This material gives maximum dimensional stability with a high finish. The quality of the finish is important because it controls the final surface finish of the production moulds.

Glass-fibre reinforced polyester resin inside and outside moulds were lami-

nated on the master pattern. The inside mould was fitted with steel locating and pressure bars so that during production the two moulds could be accurately positioned and pressure applied for the jointing process. The outer mould is fixed to a table formed to the coach contour and fitted with points for the reception of the locating bars on the inside mould. Location points for the door lock and hinge inserts are also provided. These are fitted as reinforcement to the door laminate where additional local strength is required.

Lay-Up Procedure

For production the moulds are thoroughly cleaned and the inner faces polished with wax, followed by the application of a release agent. A fairly heavy layer of resin is then applied and covered by a prepared glass mat. The whole is then consolidated by brushing and rolling to ensure complete impregnation of the glass-fibre by the resin. Alternate layers

of resin and glass fibre are applied, until the required thickness of structure is obtained, free from air bubbles and imperfections.

On completion of the two laminates, the inner laminate in its mould is inverted over the outer laminate, also in its mould, while still wet, aligned and lightly but evenly clamped by the locating bars and posts. The completed assembly is left to set for a few hours, after which time the moulds are opened, the doors removed, and edges trimmed where necessary.

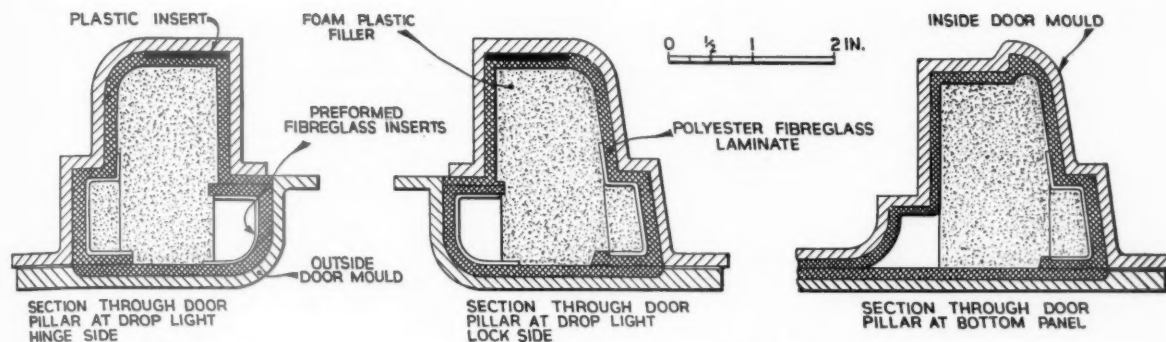
Curing Process

The door is then put in a curing room for a period of two weeks in a temperature in excess of 100° F. to permit complete polymerisation and ultimate stability. The door is completed by fitting standard drop lights, lock hinges, garnish rail, and so on. The method of fitting is similar in most cases to normal practice.

In the preparation of the door shell as a laminate such items as drop light



Doors being stored in the curing room to complete polymerisation



Sections through door pillars, showing inner and outer moulds and formation of glass-fibre laminate



Outer mould, on table, and inner mould, showing locating and pressure bars

to the Southern Region by Fibreglass Limited, St. Helens, Lancs; the polyester resin by Bakelite Limited, London, S.W.1; and the pigment by Reeves Limited. The production of the doors is under the general direction of Mr. F. J. Pepper, Carriage & Wagon Engineer (Eastleigh).

RHODESIA RAILWAYS ADVERTISING.—Rhodesia Railways has revised the method of advertisement presentation in Rhodesian newspapers. In the past there has been criticism of the spread of railway advertisements over a number of pages, and in different issues of papers, with the result that on occasions announcements have been overlooked. Under the new scheme there will be a weekly composite advertisement appearing on Fridays only. Announcements will not appear on other days unless there is some urgent or other special reason for making an exception of any feature.

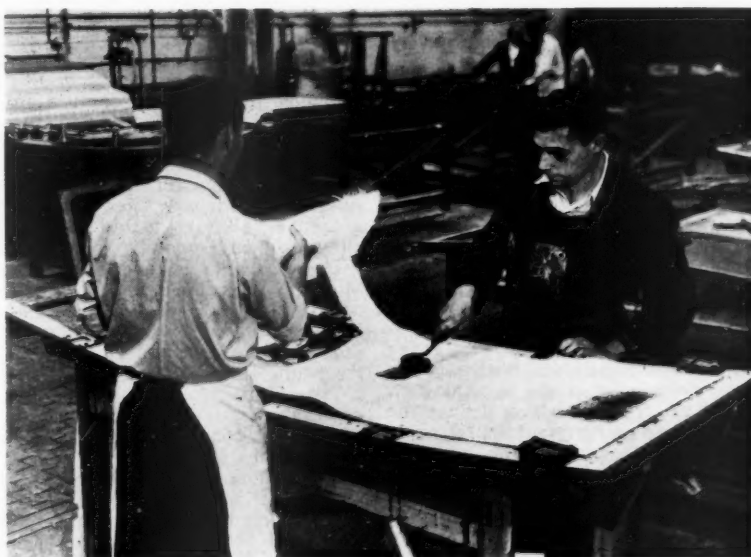
stops, drainage channels, and so on, are incorporated. This reduces assembly charges to some extent.

The door, green in colour because of the added pigment, is finished with paint and varnish as for normal coach work.

Two patterns are being produced, the S.R. door, suitable for former Southern Railway type stock, and the B.R. door to replace the existing British Railways standard door. Some 400 doors are already in service, mostly as replacements on suburban electric stock.

In the development of the standard B.R. door the garnish rail and interior finish moulding, suitably pigmented, have been included at separate laminates. Also incorporated in the laminate are interior finish panels in plastic sheet. The positioning of this plastic sheet during the moulding process has involved the use of vacuum holding equipment, a method which has proved very satisfactory.

The glass-fibre matting is supplied



Glass-fibre mat being laid into resin in the outer mould

Problems of the German Federal Railway

Difficulties common to British and the German Federal Railways and the approach to them that is being made in Germany

By Ernest Davies, M.P., Assoc.Inst.T.,

Chairman, Parliamentary Labour Party Transport Group

AS a member of the all-party group of M.P.s who recently visited Western Germany at the invitation of the Federal Government to tour the German Federal Railway, I found that the problems and measures being taken to surmount them, closely resembled those of British Railways. Both have been accumulating large deficits over recent years and largely for the same reasons. Freight traffics have fallen sharply, first because of unequal competition, and more recently also because of trade recession; profitable traffics go to the roads and the unprofitable are left to the railways; the railways are handicapped by statutory obligations not applicable to other transport forms; charges have lagged behind rising costs; and capital investment since the war has been inadequate both to catch up with arrears and to bring the systems up to modern standards to enable them to halt the drift of traffic to their competitors. Both suffer from ministerial interference and sometimes from the fact that greater weight is put on political than on economic factors, particularly as regards charges, closure of unremunerative lines and limitation on capital expenditure.

The answers sought are similar: rationalisation and modernisation, equalisation of competitive conditions, restriction on road competition and removal of out-dated obligations, or where they are retained for public service reasons, the assumption of the financial liability by the state. There may be differences of emphasis, but not in the general approach. The German railways in some respects confront larger problems, and handicaps and the difficulty of overcoming them is correspondingly greater.

State and Privately Owned Lines

The entire railway network in the Federal territory consists of the federal-owned State railway, the Deutsche Bundesbahn, and approximately 250 non-Federal-owned public railways, some owned by the Länder (provincial Governments) and others by municipalities or commercial concerns. Technically and operationally they are run in close collaboration, the non-Federal lines for the most part acting as feeders to the Federal system. The latter operate under the Federal Railway Law of 1951, which defines the administrative structure, imposes statutory obligations, including common carrier status, and places considerable responsibilities upon the Federal Parliament and the Ministry of Transport, whose approval must be obtained on many matters of policy and administration.

Nevertheless, although at least half the staff, including all the higher ranks, are civil servants, the railways are not operated as a department of State. Nor on the other hand are they analogous to a public corporation on the British model, but are managed by their own administrative bodies, the composition of which is somewhat complex.

An Administrative Council of 20, including representatives of industry, the trade unions and the provincial Governments surmounts an Executive Board of four Presidents appointed by the President of the Western German Federal Government. They are of equal status, but the President responsible for the managerial function is the first among equals and in effect acts as chairman. They are assisted by a Board of Management. The main administration is at Frankfurt. Decentralisation is effected by delegation to 16 Regions, each with its own President, with powers not greatly different from those of the Regions of British Railways. There are, however, no Area Boards.

Budgetary Control

The Regions work within an approved annual budget, and power for capital expenditure is very limited, being strictly controlled by the central administration. The headquarters staff is kept to a minimum, totalling only 530 out of a total railway staff of some 450,000. The central management is subject to considerable supervisory powers of the Minister and Parliament. An annual budget has to be agreed with him, as well as with the Minister of Finance. Here is the parting of the ways with the public corporation, as annual estimates have to be submitted to the Minister, argued over, and finally approved in consultation with the Minister of Finance. There is thus detailed budgetary control.

The railway law further requires that certain concessionary fares be granted, notably for all travel to and from work on weekly and monthly tickets. Any changes have to be approved by the Minister. A committee representative of the railways, industry, the Länder and the Ministry submits recommendations on charges which then go through the political mill. In Parliament there is an all-party standing committee which reports on proposed legislation which major changes in charges require. This is probably the German railways' greatest handicap. Over 90 per cent of journeys are at concessionary fares and average about half of normal fares. They have not risen proportionately to wages, and it is reckoned that whereas before the war a worker on average

wages had to work an hour a week to earn his expenditure on travel to work, today he need work only half an hour. Experience with attempts to abolish workmen's fares here indicates even the greater political difficulty of increasing, let alone abolishing, such fares on German railways. In addition, they have to carry a very heavy pension burden, including those of some former employees of the Eastern Zone over which section of the German railway system the Federal Railways of course have no control. There is co-operation at the technical level, but no more.

"Social Burdens"

The railway administration contends that these "social burdens," as it calls them, account for the large deficits, the true extent of which it is difficult to ascertain, as the final figures are only determined after long wrangles with the Ministries of Transport and Finance and finalised even years after being incurred. By and large, in recent years it seems they have been running at between £50 and £80 million annually. The administration claims that if its accounts were prepared on the standard basis agreed by the International Union of Railways, that is, if all social obligations were excluded and they were true commercial accounts, there would be no deficit but a substantial surplus of some millions. The deficit is met by the Federal Government.

Reducing the Deficit

To get the deficit under control the railway administration is making determined efforts. It is confident that if the railways were put on the same footing as other forms of transport, they could ultimately become self-supporting. Its aim is to be free of subsidies. In approaching this target there are differences in emphasis rather than in method between the British and German railways. Greater stress is placed by the latter on the need to bring into line the basic conditions of operation of all carriers, that is, to equalise them as far as practicable, and thereby remove the distortions brought about by influences for which the railways are not responsible. The favourite expression seems to be that there must be "equal starting conditions." As their competitors do not have to carry the same financial burdens as they, the railways consider that each should pay its full share of costs with taxation equally applied and a fair apportionment of investment; and above all, if the railways are obliged to carry social burdens, the State should shoulder the financial liability arising therefrom.

The administration is very cost-conscious and maintains that with the equalisation of costs, and with the corollary that charges be permitted according to cost, then the railways would be in a sound competitive position. It is on this basic approach to competitive conditions, costs, and charges, that greatest emphasis appears to be placed, far more than on modernisation, which is taken for granted. The administration is satisfied that with the removal of these handicaps it can perfectly well manage its own affairs and be sufficiently technically and operationally efficient to attract the traffics.

Summarised, the steps considered necessary to eliminate operating at a loss are: First, removal of certain social obligations, particularly those relating to charges, and of other statutory requirements familiar to most railway administrations, including common carrier obligations, maintenance of bridges, level crossings, and so on; second, placing of competitors on an equal footing with themselves; and third, by modernisation, though the word "rationalisation" is preferred as that embraces streamlining the system, including the elimination of unremunerative lines.

Road Competition

The Federal Government has in part accepted the view that competitors should be placed on an equal footing with the railways. It has taken steps to equate road and rail costs and charges and to restrict road competition. All short-distance road haulage is free from licensing, and is taken as a radius of 50 km., say 32 miles. Beyond that the number of vehicles licensed for hire or reward was frozen last year at about 21,000 for eight years. These are allocated en bloc to the provincial Governments which administer licensing systems. For these long-distance traffics road and rail charges are statutorily fixed and are normally the same, but last year some differentials were introduced to influence wagonloads of bulk traffic to go by rail and smaller consignments by road.

It is alleged, however, that there is a good deal of subversive rate-cutting by hauliers. The railways cannot grant exceptional rates without ministerial approval and they must be equally applied. In practice there are very few such rates.

Certain restrictions on vehicles are aimed at protecting the railways; others which have the same effect are purportedly for reasons of road safety, as road accidents occur at an appalling rate, with fatalities twice those in Britain. Loads are restricted to 20 tons and overall laden weight to 24 tons. Emphasis is on the equalisation of costs rather than restriction, however. The justification is that road transport does not pay its fair share of road costs and can charge merely on the basis of its current operating costs. Accordingly petrol and diesel fuel taxes have been increased with the differential between

petrol and diesel reduced. The German railways pay the full rate of tax, but inland shipping only 50 per cent. The latter, which carries about one-third of all goods traffics, is also exempt from the transport tax which both road and rail pay. To bring the costs of the ancillary user into line, a special ton-mileage tax is imposed on those carrying their own goods in their own vehicles on long distance, and is currently 5 pfennigs a ton-km., which is about 2d. a ton-mile. Such operators are not subject to licensing. The result has been a 20 per cent drop in ancillary user carrying, but part may be due to trade recession, as railway freight traffics have not reflected any gain therefrom. The constitutionality of these various restrictions and taxes on road transport is being challenged in the courts, there having been strong opposition from industry and interested parties.

The railways only exceptionally operate road haulage, for instance where branch lines have been closed, and they contract out their collection and delivery services. Rail-road operations, however, are being developed with containers, "piggy-back" service of loaded lorries on flat wagons, and so on.

Road passenger transport does not constitute such a problem as road goods carriage, as generally long distance bus and coach fares are higher than railway fares. The railways themselves operate 1,300 road vehicles, mainly to provide alternative services where branch lines have been closed. They also work in close co-operation with the German postal buses.

With regard to traffics generally, experience is similar to that of British Railways. The German railways have an advantage with freight train operation, as all wagons are fitted with continuous brakes. As concerns passenger traffics express trains are profitable, as are most inter-city fast trains, but fast stopping trains only break even and local and branch line services lose heavily. Difficulties are encountered in meeting air competition, but Germany participates in the "Trans-Europe-Expresses" which were instituted to meet it. The visiting M.P.s found the "Saphir," which runs from Ostend to Frankfurt, the last word in passenger comfort. Many express diesels with supplementary charges have been put into service and many fast diesel trains without them. Much attention is paid to arranging schedules to suit business men. Special facilities are also provided, where appropriate, including telephone and secretarial services in many trains.

It would be wrong to give the impression, therefore, that the administration was so pre-occupied with the burden of statutory obligations and unfair competition, removing the one and equalising the other, that it was insufficiently concerned with technical modernisation of track, signalling, remote control, rolling stock, and equipment. All are in progress, but the

improvement in technical efficiency is limited by availability of funds. These are provided on an annual basis by the Federal Government on loan at 5 per cent and repayable over 15 to 20 years. Recently arrangements have been made for credits on a similar basis from the provincial Governments. There is no long-term programme corresponding to that of British Railways, which in fact evokes the envy of their opposite numbers. Expenditure has so far been on a lower scale, totalling some £110 million over the last six years. Consequently in some fields modernisation has not progressed as rapidly or as far as in Britain, but in others, particularly where Germany was the pioneer, as in diesel traction and the use of the long-welded rail, it has gone further.

As to motive power, the target is similar; to substitute steam with electric and diesel. The objective is electrification of heavily-trafficked trunk routes, and dense suburban lines, with diesel traction elsewhere, except where traffic is so light that railbuses suffice. No more steam locomotives are being purchased, but it will be many years before the last go out of service. Electrification is not now proceeding very quickly. Of 32,000 route-km., 8,000 are electrified and 1,100 more are scheduled for electrification as speedily as financial means permit. The most important scheme is conversion between Munich and Cologne, which is complete as far as Frankfurt and will open for all traffic to Cologne in May.

Diesel-Hydraulic Traction

Dieselisation is proceeding faster. The diesel-hydraulic locomotive has been accepted as standard. No more diesel-electric locomotives are now being purchased. Preference is on the grounds of the lighter weight of the diesel hydraulic, less wear-and-tear on tracks, and cheaper maintenance, with equal efficiency, even though the initial cost is greater. Stress is on standardisation with a minimum of types. Thus only three engines are now installed, the MAN, Daimler-Benz, and Krauss-Maffei, and only two hydraulic transmissions, the Mavbach and the Voith. Engines, transmissions, and parts are interchangeable, which makes for great economy in maintenance. Time spent on overhauls has been greatly reduced and utilisation thereby correspondingly increased. At Nuremberg depot, where all major diesel overhauls are carried out, complete engine overhauls take only 16 days. Diesel locomotives are run 600,000 km. between major overhauls, or approximately for three years.

The "Trans-Europe Express" triele-unit diesel trains, which are not interchangeable with other rolling stock, as they are to the international specification of the International Union of Railways, run 25,000 km. a month, the standard "V.207," 2,020-h.p., 28,000 km. a month. This last is the standard locomotive for main-line work. It was developed by Krauss-Maffei and is

(Continued on page 70)

Modernising Goods Traffic from Copenhagen

Covered area for less-than-wagon-load traffic



Self loading area, showing ramps to platforms for vehicle access

THE main goods station in Copenhagen has hitherto handled all the less-than-wagon-load traffic in three goods sheds, one for express goods, one for arriving, and one for departing goods. These sheds and the tracks to them were built more than 50 years ago.

Subsequently the shed for inwards goods was modernised, so that fork-lift trucks and pallets could be used. The tracks along the shed were rebuilt and now consist of two parallel tracks with a platform between. At the same time all the express goods traffic to and from Copenhagen was concentrated on this goods station and transported to and from the other stations by lorry. Therefore all express goods leaving Copenhagen during the night leave the city by the same train.

The down less-than-wagon-load traffic has been accelerated by the introduction of a fast goods train leaving Copenhagen at 6.30 p.m., and by this train and its connections all goods received in Copenhagen up to 5 p.m. can be delivered in practically all the towns in the country before noon the next day, and in most places before 6 a.m. This service is achieved by the customers loading their own goods.

In 1952 a committee was appointed to investigate the less-than-wagon-load traffic in Copenhagen. At that time the traffic from the different goods stations in the Copenhagen area amounted to about 900 tonnes a day, of which 200 tonnes are express goods and parcels, and 700 tonnes ordinary less-than-wagon-load traffic.

On the limited space available, it was found impossible to build a shed sufficient to deal with this amount of goods. It was therefore decided that the system of self-loading by customers should be maintained, but under improved conditions.

The new self-loading area consists of six tracks with three platforms and two roadway for the lorries. The six tracks

can accommodate 85 goods wagons. The lorries back up to the wagon and the driver does the loading. If there are no wagons on the tracks, the goods can be unloaded on the platform. On the eastern end of the platforms goods are loaded on pallets and in containers, and fork-lift trucks carry them to the wagons.

The whole of the loading area, some 14,350 sq. yd., is under cover. Four of the tracks are laid on a layer of concrete, and there is concrete between the rails, so that lorries may drive across the track. The track itself is laid with long-welded rail.

Roof Construction

The flat roof on the fringe of the area is carried by prefabricated beams of cable concrete. Each beam was made in two halves, and assembled *in situ* with a cable reinforcement consisting of 12 rods. The cable also passes through the top of the supporting columns.

The roof in the centre of the area is carried by lattice girders of pre-stressed construction. The girders are prefabricated in four large and three small parts, which are placed *in situ* and assembled by steel cables.

There are roof lights along the centre of the flat roof, and a glass apron, inclined at 45 deg. along the edge of the roof. Roof lights are installed over each platform and in the middle of each span. At night the area is lit by fluorescent lighting. Light for loading inside wagons is by movable lamps.

The next step in the modernisation work will be the rebuilding of the main goods shed, so that a large part of the down traffic from the whole Copenhagen area can be concentrated there. It is the intention, that less-than-wagon-loads should still be brought to the local stations and agencies, whence they will be brought by lorries to the main goods station for loading.

Problems of the German Federal Railway

(Concluded from page 69)

basically the same diesel hydraulic locomotive which British Railways, in collaboration with this firm, is building at its Swindon Works. A more powerful version is under development.

Diesels are being used increasingly, with smaller and less powerful types in service, for suburban, branch line, and other services and for shunting operations. The two-car railbuses with two 150-h.p. engines operate on branch lines and it is estimated that compared to steam they have a utilisation of 70,000 more hours a year. Despite the relatively small amount of postwar electrification, it is estimated that economies in operating costs from both electrification and dieselisation are being achieved of some £20 to £25 million a year.

Apart from adoption of diesel traction, there is no noticeable greater technical advance on German than on British or French railways. Railways are nothing if not international and there is a universal exchange of knowledge and know-how; so basic technical developments are similar. The main difference lies in local conditions and preferences, and the extent of application is largely governed by financial considerations.

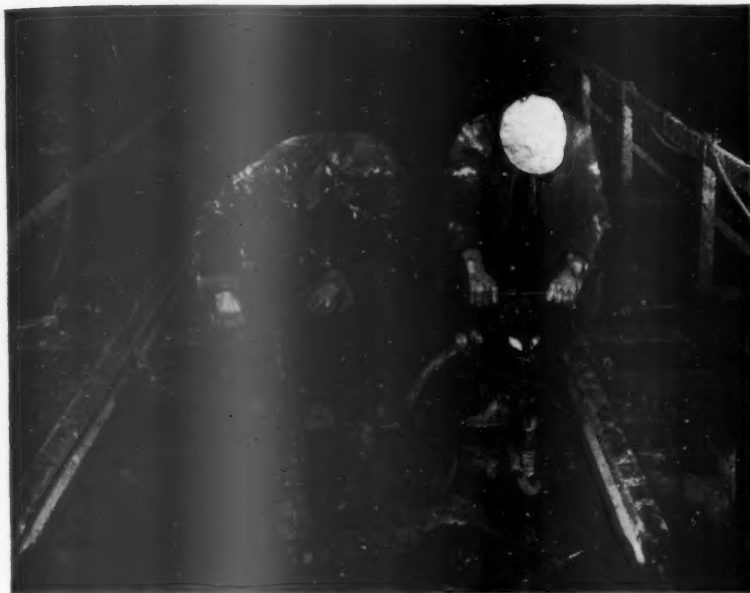
A.T.C. and Signalling

Thus in regard to automatic train control and colour-light signalling, development is similar. The modern signalbox at Frankfurt is claimed to be the most modern in Europe, and is impressive because of the range of its operational control, but the system is the same as for instance at York. Equally in the mechanised marshalling yards the same methods are used as at the most modern British yards except that the Germans lack automatic retarders.

It would appear therefore that it is in their approach to current transport problems, common to most highly developed countries, more than on the technical side, that the German Federal Railway has most to offer. Financially, Germany is no nearer solving these than this country, but it is clearly not lacking in ideas as to how they might be tackled. In view of the urgency of finding the right answers a committee of the Federal Parliament has been appointed to inquire into Germany's transport problems in general and the position and future of the Federal Railway in particular. It may not report for some months but when it does, in view of the similarity between many of the problems of the German and British railways, its findings can but evoke interest here.

Strengthening Gillingham Tunnel, Southern Region

Mass-concrete invert to stabilise tunnel footings



Old deformed invert being broken out

GILLINGHAM Tunnel, Dorset, on the West of England main line of the Southern Region of British Railways was completed in 1859, on the then Salisbury & Yeovil Railway. Excavation throughout its 745 yd. length was mainly in a silty clay, and at the western end this clay was fine grained and bands of sandstone rock and sand discharged much water into the tunnel. The clay in this portion exerted heavy swelling pressures during construction, which required very strong timbering, and a brick invert was also provided to strengthen the tunnel footings. The water flow was eventually reduced by driving a heading over the tunnel for a length of 200 yd. and piping off the flow. This water is very pure and is today piped for use to the Templecombe Motive Power Depot. At the eastern end of the tunnel, apparently owing to better ground conditions, construction work proved less difficult and no invert was installed.

Tests in Tunnel

Cross-sections taken throughout the length of the tunnel reveal that the brick lining is relatively much less distorted in the eastern half of the tunnel, whilst the western half shows continual and abrupt changes of section, both in crown level and wall clearance. Throughout its life, the central and western portions of the tunnel have been very wet, and attempts have been made on a number of occasions to remedy the weak track formation conditions arising, and also to prevent movement of the tunnel walls.

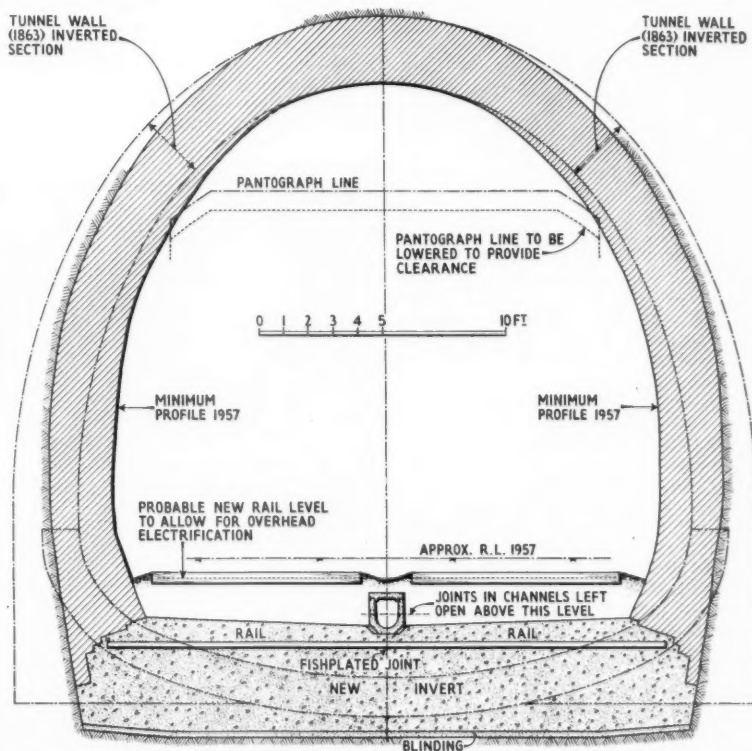
A soil survey carried out by the staff of the Chief Civil Engineer's Depart-

ment confirmed the evidence of the old tunnel construction experience and the general condition of the linings, by

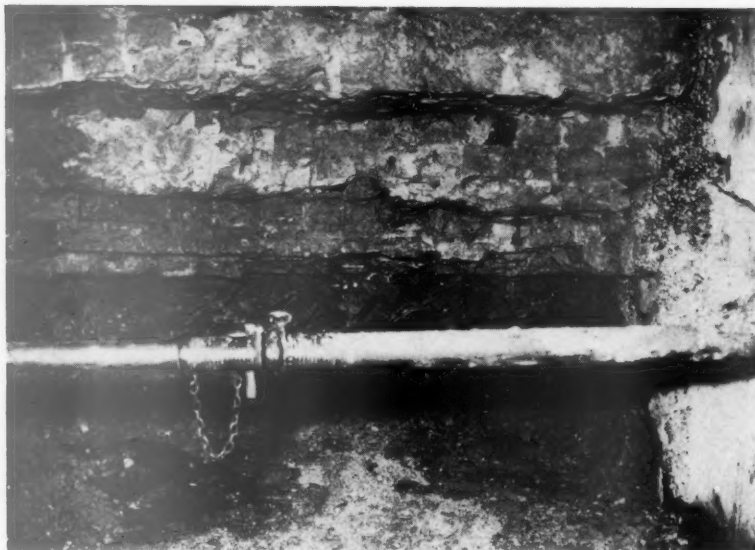
showing that the clay in the western half of the tunnel was both weaker in shear and of a more treacherous character than elsewhere. This survey is being used as a basis for the design of the new tunnel invert. It has been decided to install the latter throughout the tunnel, a lighter form of design being used in the eastern half, compared with that now being constructed in the western half.

The portion of the invert now being installed consists of a concrete slab 4 ft. 6 in. thick with its top surface approximately 2 ft. 9 in. below the existing rail levels. This concrete invert is reinforced with old rails and is taken under the existing tunnel walls. The scheme involves excavating some 7 ft. 3 in. deep below rail level, cutting out the defective old brick or old concrete invert and a proportion of the existing tunnel wall footings, disposing of all excavated material outside the tunnel, and bringing in and placing the concrete to form the new invert.

Temporary crossovers have been installed at each end of the tunnel to enable the work to be carried out with single line working. The crossovers at the Exeter end are installed some $\frac{1}{4}$ mile back from the tunnel portal to allow access to the tipping ground and concrete mixing plant. The up and



Cross-section through tunnel, showing original position of wall and minimum profile in 1957



Bottom of side wall broken out before concreting of new invert

down lines are used alternately as the single running line to suit the programme. The work is carried out by day and night shifts to reduce the overall time of single line working to a minimum and to avoid leaving the excavations open or unattended. The duration of each shift is 11 hr.

Method of Working

The tunnel is divided into 6 ft. sections which are marked on the tunnel walls and suitably numbered. These 6 ft. sections, which ultimately form the completed invert, are excavated and concreted for half the width of the tunnel in accordance with a schedule planned to ensure the minimum loss of support to the side walls of the tunnel.

The scheme of operation has been based on the principle that the work will be confined to a length of 2 ch at a time, completing the whole of this portion before moving up to the next 2-ch. length, because from a structural and working point of view it would be most unwise to attempt to carry out more than this length at one time.

Work proceeds simultaneously on two of the half sections under one track at a time. The excavated material is hand-loaded into specially designed skips carried on normal platelayers' trolleys. Four trolleys are used and placed one on each side of the two trenches being excavated. As and when these become filled the trolleys are pulled simultaneously out of the tunnel by a standard rail motor trolley.

The occupied track is retained in position throughout the course of the work for the purpose of transporting materials and spoil, and the sleepers are moved or packed up from the new concrete invert to suit the progress of the work.

When excavating under the tunnel wall footings, temporary props formed

of short lengths of old rail and timber are inserted, as a safeguard against loose or falling bricks, where necessary.

The concrete for the invert is mixed outside the tunnel and conveyed to the site of work on boxed platelayers' trolleys fitted with rubber seals and drawn by a rail motor trolley. For each journey into the tunnel two trolley loads of concrete are conveyed and when unloaded into the excavations it is vibrated with pneumatic vibrators.

Three diesel driven rotary compressors, coupled to an air reservoir tank, have been installed on a stage immediately outside the mouth of the tunnel with a 3 in. steel pipe air main

laid throughout the length of the tunnel suitably tapped at frequent intervals for hose connections. This provides an adequate supply of compressed air to operate the pneumatic clay spades, picks, and concrete breakers.

Drainage

To deal with the considerable volume of water which flows through the 6 ft. drain, a 2½ in. electrically-driven Univac self priming pump is mounted on a special trolley which is positioned on the occupied track, east of the working area. This pump works continuously night and day by-passing the water over the working area through a 3-in. steel discharge main. While this pump deals with the majority of the water, two 1½-in. electrically-driven lift and force diaphragm pumps are provided, one at each of the excavations being worked, to dispose of the local water coming through and under the tunnel walls. These 1½-in. pumps are connected by flexible hoses to the nearest end of the working area. A diesel driven 4-in. pump, mounted on a separate trolley, is kept in reserve should the Univac pump break down.

At the completion of each 2-ch. length of invert, a system of ballast retaining timbers is fixed along the 6 ft. way and the track adjusted to correct line and level. New stone ballast is then conveyed into the tunnel by hopper wagons and discharged directly over the new invert. The ballast is consolidated by pneumatic vibrators.

The tunnel is lit with electric overhead lighting, and a three-phase current supply for this and the electrically driven plant has been provided specially for this purpose.

(Continued on page 82)



Vibrating new concrete into place

ELECTRIC RAILWAY TRACTION SECTION

Modern Control Techniques

A DISCUSSION on "Modern Control Techniques on the Railways" held by the Measurement & Control Section of the Institution of Electrical Engineers on December 16 was concerned mainly with remote supervisory control of traction supplies, although wider issues were raised in the course of the evening. The subject was introduced by Mr. W. J. Webb, Assistant Electrical Engineer (Systems), British Railways Central Staff, and Mr. L. A. M. Ginger, Assistant Chief Electrical Engineer, London Transport Executive.

Mr. Webb's opening remarks were illustrated by examples of practice on the Southern Region in new control rooms provided under the London area change-of-frequency scheme, in which discrepancy switches are mounted on a diagram of the tracks controlled. On the other hand, Mr. Ginger's introductory comments on London Transport practice showed diagrams and discrepancy switches representing power circuits only, which does not require the switches to be so closely spaced and allows a larger pattern to be used. In fact, while on the Southern Region boards the operator selects the switchgear to be controlled by means of a discrepancy switch and then presses a pushbutton, the L.T.E. switches combine the contacts for selection and operation. Both types of board are normally dark, and Mr. Webb drew attention to the significant economies in power consumption on large boards achieved by using discrepancy switches to indicate the condition of the remote switchgear instead of continuously illuminated "open" and "closed" lamps as in earlier installations. There was agreement on the desirability of operators having to control the switchgear from the boards instead of from their desks, although master panels are used in other Regions and presumably have not been found detrimental to operators' alertness.

In the ensuing discussion various views were expressed on the maximum number of switches which it is practicable to control from one board. It was mentioned that a control was being planned for the Southern Region electrification extensions to the Kent Coast which would cater for 41 substations and 45 track-parallel huts, or something over 600 switches. A figure of 700 switches was suggested as a possible practicable maximum to be under the control of one operator and an assistant from one board, anything over this requiring either two control rooms or a much larger control room with two boards and two operating staffs. A limiting factor was the amount of track possession for which control room staffs had to arrange so that work could be carried out in safety on the track. Another opinion was that system voltage would have a bearing on the matter in that it affected the extent of the area for which operators were responsible. On low-voltage, third-rail systems, section lengths might be one or two miles, and on 1,500 V. d.c. perhaps two or three miles or more. With a 25-kV. a.c. system, on the other hand, section lengths might go up to seven miles. This affected the number of switches which could be controlled from one room, for 600 switches would cover some hundreds of miles of track, resulting in over-centralisation of control. The greater the area the operators had to control, the greater would be the number of factors to consider before taking action, and so the scale of the board could have its effect on speed of operation, while some parts of the area might be so remote that operators might not be able to take steps appropriate to local conditions.

Arising out of the foregoing, a speaker asked whether routine operations, such as starting up and shutting down substation plant, making arrangements for maintenance and repair, and so on, might not be effected by a punched card computer system. There might also be scope for computer control in emergencies, when the best course of action to take depended on correct and rapid assessment of a

great number of factors. Electronic systems were mentioned by Mr. Webb and Mr. Ginger, and one contributor to the discussion referred to the rapid operation of transistors as a means of coding control impulses and decoding return indications in centralised signalling schemes. He mentioned three control points which have been in operation for some months on the Styal line of the London Midland Region 25-kV. Manchester-Crewe electrification, where the transistorised equipment handles 100 indication codes a second and operates continuously, scanning the condition of the control switches and sending information back over a single pair of wires. There is, indeed, a growing community of interest between the electrical and the signal engineer, and the fact that members of the Institution of Railway Signal Engineers were invited by the I.E.E. to participate in this meeting points the way to other equally useful exchanges of views in future.

Flexible Drives

GROWING recognition of the advantages of fully-springborne motors has resulted in several new forms of transmission being designed for use with this form of suspension. A recent development from the Continent is the A.C.E.C. system for high-speed electric locomotives. This belongs to the class of drives in which flexibility is provided between the motor and the pinion, an arrangement which reduces the torque to be transmitted by the flexible elements compared with that at the final gearwheel, but requires a hollow armature shaft inside which the cardan shaft can be located. Sometimes the couplings take the form of discs or flat springs but in the A.C.E.C. drive they consist of plates with internal and external teeth so shaped that the shafts can assume slightly oblique positions relative to each other while in engagement. There is one such coupling between the armature and cardan shafts, and another between the cardan shaft and the pinion. The couplings, which operate in an oil bath maintained under pressure by centrifugal force, are of small diameter and can be accommodated within the overhang of the motor windings so that the minimum useful space is lost. In fact, an existing nose-suspended motor of a Belgian National Railways locomotive was modified to take the drive without changing the length or diameter of the armature or commutator, although in its original form the machine had been designed to give the maximum output possible in the space between the wheels.

Hitherto when flexible couplings have been used they have been either at the motor end of the drive, as in the A.C.E.C. example, or at the axle end. They occur, however, in both positions in the new S.N.C.F. "16500" class locomotives to which brief reference is made on page 76. In these there are actually three in each bogie, one between the single traction motor and the variable-ratio gearcase, and the other two between each final gearwheel and its driven axle. All are of the Alsthom floating ring type with Silentbloc bushes as used in the two S.N.C.F. high-speed Co-Co prototypes and the subsequent "7100" class. French practice is still divided between this Alsthom form of coupling and the form of cardan drive first applied by S.F.A.C. to the Bo-Bo prototypes Nos. 9003 and 9004 and now used in several Bo-Bo classes both on the 1,500-V. d.c. and 50-cycle a.c. lines. While it has been announced that Brown-Boveri spring drives will be fitted in British Railways 50-cycle locomotives, this is in pursuance of the policy of using equipment already tried in service as far as possible and does not indicate any lack of enterprise in this direction by British manufacturers. The subject is being widely studied, and it is likely that a cardan system suitable for motor coach bogies, under development by the English Electric Co. Ltd., will be finalised in the course of the present year.

B.T.C. Electrical Testing Laboratory at Willesden*Investigation of adhesion between wheel
and track of electric locomotives*

Gallery, showing control desk (left) from which the power fed to the bogie is regulated

THE growing momentum of British Railways electrification programme has underlined the need for continuous investigation and research. A notable problem is that of adhesion between wheel and track of electric locomotives, and this and other problems are being investigated and solved at the Electrical Testing Laboratory set up at Willesden in 1957, by the British Transport Commission.

Adhesion has always been a significant factor in the design of railway locomotives, even with steam traction, since a locomotive is rendered comparatively ineffective if the driving wheels slip under power. With electric traction, however, adhesion assumes much more importance, because with modern electric locomotives, it is possible to obtain far greater power for the same weight. In planning the laboratory the B.T.C. therefore gave urgent priority to the need for adhesion experiments.

Test Track

The principal feature at present installed in the laboratory is a raised length of permanent way, 100 ft. long, on which electric traction equipment can be tested either stationary or moving slowly. Most electrically operated vehicles consist of two individual bogies, one or both of which may be used for traction, with a body resting upon them, but for most purposes it is sufficient to make measurements upon one bogie only, additional weights being used to represent the body. While any motor-bogie may be so tested in this

laboratory, one bogie corresponding to the Euston-Watford stock of the London Midland Region has been permanently provided for carrying out experiments of a general nature.

The movement of the vehicle is controlled from a gallery. A separate supply of low voltage d.c. power, earthed on one side, is provided by two Ward-Leonard motor-generator sets and is conveyed to the vehicle by third and fourth conductor rails and picked up by shoes in the usual manner.

Because the vehicle is tested only at standstill or at very slow speeds the full values of current can be provided, and the full forces and heating effects obtained, without the voltage of the conductor rail exceeding about 50 V.

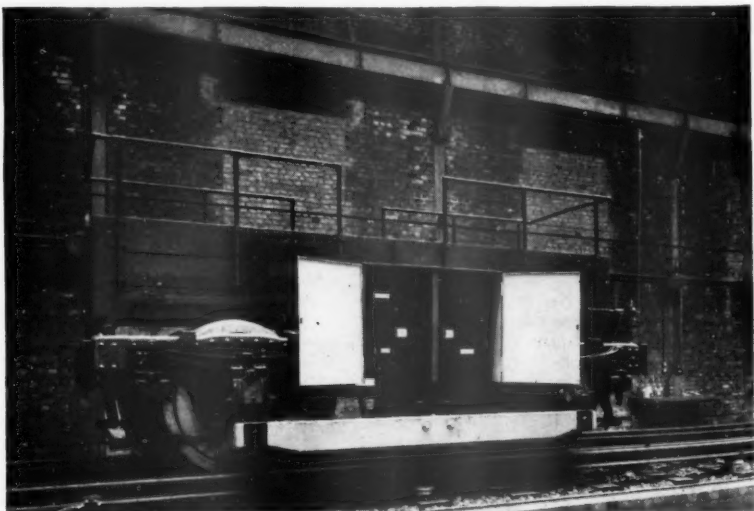
Adhesion Experiments

In adhesion experiments, a wooden container, weighted to simulate a locomotive body, is added to the test bogie. Individual hand braking is fitted for each pair of wheels. A group of knife switches, located on one side of the vehicle, enables the two motors to be isolated, or connected individually or together in series or parallel in either direction. Stationary adhesion tests are usually made with the two motors of the bogie in opposition so that the effects of torque reaction are eliminated, but slow speed tests may be made with one or both motors, the speed being limited by applying the hand brakes. Another feature of the equipment enables the track voltage to be raised up to 750 V. for tests involving such factors as track insulation, leakage, and so on.

Laboratory Equipment

The laboratory is sited alongside the London Midland Region main line near Willesden Junction Station in a building which formerly housed the Willesden rotary converter sub-station. Both the machine floor and lower floor have an area of about 4,500 sq. ft. Most of the machine floor is visible from the wide gallery. The equipment includes a 10-ton hand-operated crane. The site has a direct rail connection to other main lines, is near Stonebridge Park Electrical Depot and the Willes-

(Continued on page 76)



Bogie with switch box open, showing knife switches. The motors can be used individually or together in either direction, and in series or parallel

Paris-Lille Electrification Inaugurated

New works to increase line capacity on the most heavily-occupied S.N.C.F. route so far converted to 50-cycle traction

AFTER a formal inauguration on January 7, public electric services on the Northern Region of the French National Railways between Paris Nord and Lille began on January 11. This is the first occasion on which the 50-cycle, 25-kV. a.c. system has entered a Paris terminus, and the section of the line from Paris to Creil is the most heavily-occupied route on which the S.N.C.F. has so far adopted this form of traction. As far as Creil the line forms a common artery for traffic continuing via Longueau to Lille, and to Amiens, Calais, and Boulogne; also for trains which diverge eastwards at Creil for Tergnier and Belgium and beyond. The distance from Paris to Lille is 160 miles, but the whole scheme as outlined in our issue of June 7, 1957, involves some 350 miles. It was indicated in that article that electrification of the parallel route for coal traffic between Paris and Longueau might not be proceeded with in full, and it has in

fact now been decided to electrify it only between Paris (Le Bourget) and Verberie as in future years this section will be called upon to handle trains arriving with electric haulage from Busigny or Aulnoye via Tergnier. Consequently the main Paris-Creil section is now handling long-distance freight trains which formerly used the parallel route.

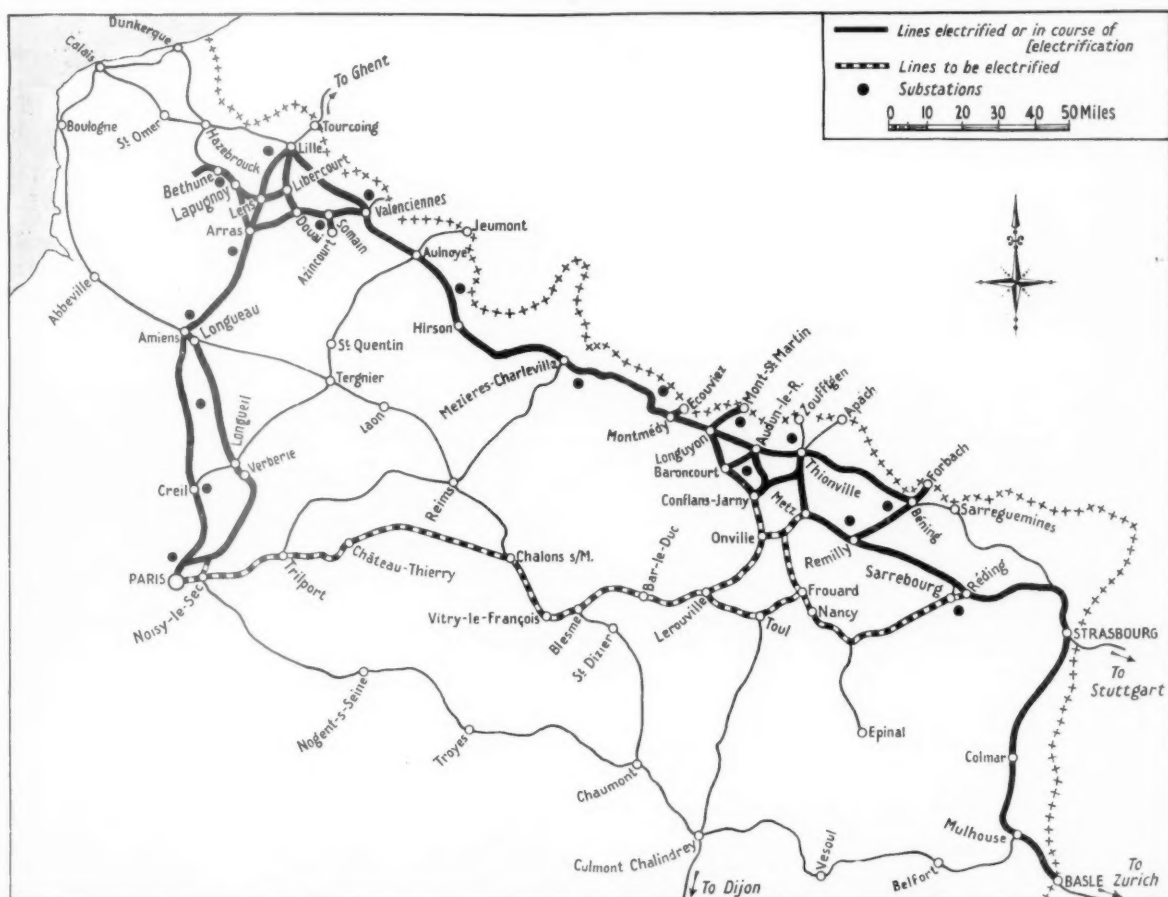
Many works have been necessary to provide line capacity. There are four tracks at present from Paris to La Chapelle-en-Serval, and these are to be extended to Orry-la-Ville at the approach to the double-track Dame Blanche viaduct. A new double-track structure is to be built here and only a single line will then remain on the old viaduct. The three tracks will continue to the flyover at Laversine on the outskirts of Creil. Here a third track has been provided already which passes under the down main line and joins the up main line from Longueau beyond

the junction between this line and that from Tergnier. By means of this third track, which is signalled for two-way working, a train from Longueau can run through Creil parallel with one coming from the Tergnier direction. The older junction between the two routes at Nogent has also been replanned so that it can be taken at 74 m.p.h. instead of 56 m.p.h. as formerly.

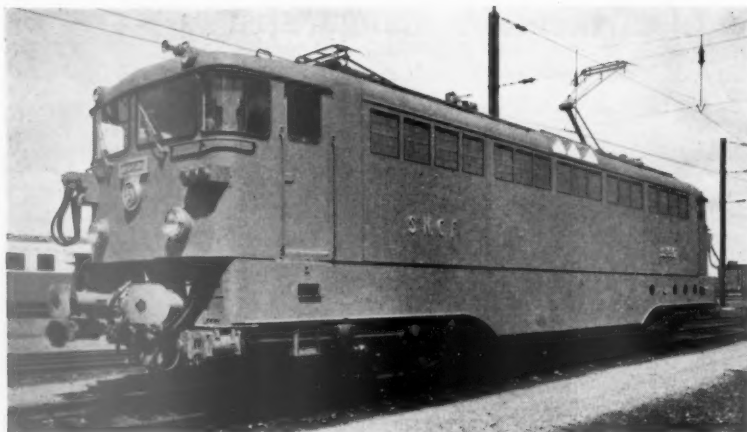
Other improvements have been made in the connections between the main line and the link with the Grande Ceinture at Pierrefitte, a third track having been provided on which trains from the Grande Ceinture, having crossed the up main line, may wait until they can be accepted on to the down main.

Creil-Lille Section

Additional refuge sidings with direct access in one or both directions have been provided at Ailly-sur-Noye and Saint Just-en-Chaussée between Creil



Electrification completed, in progress, or planned in the Northern and Eastern Regions of the French National Railways. For the time being it has been decided not to electrify between Verberie and Longueau



Alsthom rectifier locomotive of "16500" class

and Longueau. A flyover at Longueau, where the lines to Lille and Amiens diverge, has relieved the Lille line from interference by traffic passing between the marshalling yard and the Montdidier direction. At Arras the speed limit over the junction with the line to the mining area between Arras and Dunkirk via Lens has been raised from 56 to 74 m.p.h.

Major Works at Lille

Major work has been necessary at Lille Station, where long-standing plans for converting it from a terminal into a through station had not been implemented but had discouraged the undertaking of other necessary work. Now the eight original platforms have been lengthened to 437 yd., five new platforms have been built on the site of a former small group of sidings, and two more had been provided already outside the old station building. Hitherto only two running lines were available for trains leaving Lille for all destinations, except Béthune, but now there are four, as the two lines to Béthune can now be used if necessary by trains to or from Paris or Douai. Electrification of the line from Lens to Lille via Don Sainghin provides an alternative route between these points for goods traffic and also a frequent passenger service in a thickly populated area.



Central power control room at Douai

High-tension lines of Electricité de France parallel the route closely throughout and only short links have had to be provided for feeding railway substations. These are nine in number, and those at Creil and St. Denis are actually in the premises of E.D.F. substations so that no special connections have been necessary to serve them. Three of the substations are equipped

with two groups of Scott-connected transformers providing a separate single-phase output in each direction from the three-phase input. All substations are under centralised control from Douai or Paris.

With electrification have been introduced two new classes of rectifier locomotives, namely the 84-tonne "16000" class rated at 5,000 h.p., built by M.T.E., and the Alsthom 68-tonne "16500" class rated at 3,600 h.p. In the latter the single-motor bogie principle has been adopted for the first time in a complete class of locomotives as distinct from prototypes and a very flexible operating characteristic has been achieved by equipping the locomotives with a means of changing the gear ratio by operating levers.

The "16000" class locomotives are capable of hauling a 700-tonne pas-

senger train on a schedule of 2 hr. 10 min. between Paris and Lille. Lighter trains with amenities for business travellers are also being provided, as described in our issue of April 11, 1958. These include radio telephone facilities, loudspeaker service throughout the train available to the travelling ticket inspectors, and service of meals at all seats.

B.T.C. Electrical Testing Laboratory at Willesden

(Concluded from page 74)

den Motive Power Depot, and is adjacent to the existing d.c. and proposed a.c. electrified systems.

New techniques of testing have already been developed in conjunction with the existing mobile testing train, which enables locomotives or trains to be tested under exactly constant conditions of speed and power while actually running under normal conditions; but observations taken under running conditions often need to be

supplemented by observations made under conditions of stationary or very low speed working. The laboratory, therefore, complements the work of the mobile testing train, enabling controlled testing to be carried out on almost any form of electric traction equipment.

Although the laboratory was planned to give a high priority to the adhesion problem, the design of the installation is such that many different kinds of study can be carried out. The work can include the measurement of forces, currents, and heating, in all forms of electric traction equipment from locomotives, motor coaches, lengths of

track, or sections of overhead contact lines, to individual items such as motors, contactors, collector gear, and insulators. Space also has been left in the installation for items whose need can be envisaged in the near future, such as a transformer and rectifiers for supplying a.c. or rectified d.c. power.

The Electrical Testing Laboratory at Willesden, which is part of the organisation of the Chief Electrical Engineer, British Railways Central Services, represents a first phase in arrangements for testing which will be increasingly needed as the first sections of new electrification come into service.

RAILWAY NEWS SECTION

PERSONAL

Mr. Cecil W. Rodd, who, as recently recorded, has been appointed a member of the Western Area Board of the British Transport Commission, was educated at Dauntseys. After five years farming in Dorset, he joined T. Wall & Sons Ltd., as a trainee, in 1922, and was appointed to the chairmanship of that company in 1947.

and, in 1942, became Divisional Superintendent of Operation, Derby, being transferred to the similar post at Crewe in 1944. Mr. Watkins was appointed Assistant Operating Superintendent in 1948, and, later the same year, Operating Superintendent. He was appointed Chief Regional Officer, 1951, and, subsequently, General Manager. Mr. Watkins became a full-time Member of the B.T.C. in 1956. The funeral took place on January 15. A

a bell without a flaw his integrity and sincerity rang true at all times. Love of the railways ran in his bloodstream. His sudden death causes real grief to his many friends in the industry and to none more so than to his colleagues on the commission.

J. E. writes:—

The sudden death of James Watkins is a double blow; for his friends, who were



Mr. C. W. Rodd

Appointed a Member of the Western Area Board,
British Transport Commission



The Late Mr. J. W. Watkins

Member of the British Transport Commission,
1956-59

We regret to record the death on January 12, at the age of 68, of Mr. J. W. Watkins, C.V.O., D.S.O., M.C., M.Inst.T., Member of the British Transport Commission, and former General Manager, London Midland Region, British Railways. Born at Stonehouse (Glos.) in 1899, Mr. Watkins entered the service of the former Midland Railway at Ashchurch, in 1905, and served at several stations, gaining general railway experience, until he enlisted in the ranks of the 5th Battalion, Gloucestershire Regiment, in 1914. He received a commission in the field, and rose to the rank of Lt.-Colonel, in command of the 2nd Battalion, Lancashire Fusiliers. He was awarded the D.S.O. and M.C., and was four times mentioned in dispatches. Returning to the Midland Railway, in 1919, he was appointed to the headquarters staff and, seven years later, became Assistant, Outdoor Section, Chief General Superintendent's Office, Derby, L.M.S.R. He was promoted to be Assistant Divisional Superintendent of Operation, Derby, in 1932.

memorial service will be held at St. Pancras Church, London, N.W.1, at 12 noon on January 21.

Sir Brian Robertson writes in *The Times*:—

On British Railways few men could claim to be known personally by so many railwaymen as James Watkins. But he was not only widely known, he was also widely loved and respected. The son of a railwayman, he spent his life in the service of the industry and was still in active employment when he died. He was away from the railways only during the First World War and his splendid record in that war strengthened the foundations of respect in which he was held by his fellow men.

His meteoric rise from a private soldier to battalion commander testified to those qualities of leadership which brought him later to be General Manager of the great London Midland Region of British Railways, with 150,000 men under him. Like

countless, and for British Railways as a whole, and particularly for the London Midland Region which he served so splendidly all his life.

When I went to Euston from Waterloo in 1950, it was my good fortune to find him there as Operating Superintendent, and no newcomer, as I was, to a close-knit family such as that at Euston, could have received a more sincere and practical welcome. James Watkins set about the business of teaching me as much as possible in a short time about the great system, and in a way that I shall always remember with gratitude. Nothing was too much trouble, and as we got to know one another an understanding grew up between us which for me has been one of the happiest friendships I have known.

His knowledge of the L.M.S., particularly of its freight business, was immense. Most of the improvements which have been made on that railway since the war either stemmed from him or were greatly helped forward by him. But his greatest



The late Dr. Hans Sulzer
President of Sulzer Brothers Limited,
1934-59



The late Mr. Henry Oswald
Managing Director, British Brown-Boveri Limited,
1947-59



Mr. C. Williams
Appointed District Traffic Superintendent,
Exeter Central, Southern Region

contribution was himself. He was shrewd, sturdy, loyal, and very human, and in times of difficulty always cool and cheerful. His common sense attitude to people and things was inborn and never deserted him. Railwaymen as a whole have lost a fine colleague, and those of us who knew him intimately a dear friend.

We regret to record the death on January 3, at Winterthur, Switzerland, at the age of 82, of Dr. Hans Sulzer, President of Sulzer Brothers Limited, and Senior Member of the board of Sulzer Bros. (London) Limited. In addition to his connection with his family business, Dr. Sulzer was well known in the industrial and economic life of Switzerland, and internationally. During the 1914-18 war, Dr. Sulzer represented his country in Washington. On the outbreak of the 1939-45 war, he led a mission to London to seek recognition of Switzerland's position as a neutral country. Dr. Sulzer became President of Sulzer Brothers Limited in 1934.

We regret to record the death on January 8, at the age of 56, of Mr. Henry Oswald, A.M.I.E.E., Managing Director of British Brown-Boveri Limited. Mr. Oswald was educated at Adorf, Switzerland, and at Winterthur Technical College. After two years practical training at the Works of Brown-Boveri & Co. Ltd., Baden, he received an engineering degree at the Federal Institute of Technology, Zurich. He joined British Brown-Boveri in 1928. In 1932 he became Factory Representative & Resident Engineer in India for the Swiss company. He became General Manager of British Brown-Boveri Limited in 1937. He was appointed a director of that company in 1941, and Managing Director in 1947. Mr. Oswald was elected President of the Swiss Economic Council in 1952.

Mr. C. Williams, Assistant District Traffic Superintendent, Exeter Central, Southern Region, British Railways, who, as recorded in our December 26 issue, has been appointed District Traffic Superintendent, Exeter Central, was educated at Tavistock Grammar School. Mr. Williams joined the London & South Western Rail-

way in 1913 as a Junior Clerk in the District Superintendent's Office at Exeter. He served, during the 1914-18 war, with the Royal Engineers, being mentioned in despatches. After the armistice he was attached to the Headquarters Railway Directorate for Anatolian Railways, Constantinople, before resuming duty at Exeter. In 1929 he was appointed Area representative for Plymouth & Cornwall, and in 1934 he returned to Exeter in charge of the Timetable Section, Western District. Four years later he was appointed Goods Agent, Exeter Central, and, in 1941, became Chief Clerk, Western District Superintendent's Office. In 1944 he was appointed Assistant to the Divisional Superintendent and also a director of Sutton Harbour Improvement Company, Plymouth. In 1947 Mr. Williams was appointed Assistant Divisional Superintendent, and in the following year Assistant District Traffic Superintendent, Exeter Central.

Mr. R. J. Frizzell, General Manager, Northern Ireland Tourist Board, was awarded an O.B.E. in the New Year Honours.

Mr. F. E. Wilkins, Senior Executive Assistant in the Office of the Press & Publications Officer, London Transport Executive, has been appointed a principal executive assistant. He joined the London Passenger Transport Board as a Press assistant in 1947 and was appointed Senior Executive Assistant in 1949.

Mr. R. J. Hitchcock, Labour Relations Officer, London Transport Executive, has been redesignated Chief Labour Relations Officer. Mr. W. H. Mallett, Principal Executive Assistant (Labour Relations Office) has been promoted to an Officer of the Executive, with the title of Labour Relations Officer.

We regret to record the death, on January 8, at the age of 63, of Mr. J. Stafford, President of the National Union of Railwaymen from 1954 to 1956. Mr. Stafford had been a member of the union since 1922. He was a member of the N.U.R. Finance Committee, a past-presi-

dent of the union's Permanent-Way Grades Conference and one of its representatives to the International Transport Workers' Federation in Luxembourg and Germany in 1948. He was a trustee of the N.U.R.

Mr. A. A. Shoebridge, Commissioner for Government Transport, New South Wales, has retired. He is succeeded by Mr. W. L. Carter, Deputy Commissioner.

Mr. Norman H. Payne has been appointed Managing Director of Dowty Fuel Systems Limited, in succession to Mr. Stuart Davies.

The memorial service to the late Mr. Wynne Davies will take place at the Parish Church of St. Michael, Horton, Bucks, at 11 a.m. tomorrow, Saturday, January 17.

Mr. W. T. Evans has been elected, unopposed, to succeed Mr. A. Hallworth as General Secretary of the Associated Society of Locomotive Engineers & Firemen, when Mr. Hallworth retires in 1960.

Canadian Pacific Railway Company announces the following changes:—

Mr. G. J. Fox has succeeded Mr. G. Walsh as District Passenger Agent, St. John.

Mr. R. S. Henry has succeeded Mr. E. W. Trevis, who has retired as General Agent, Passenger Department, San Francisco.

Mr. M. T. Jackson has succeeded Mr. E. A. Kenny, who has retired as District Passenger Representative, Cleveland, Ohio.

Mr. G. L. Wanamaker has succeeded Mr. M. T. Jackson as District Passenger Representative, Pittsburgh, Pa.

Mr. G. R. Watson has succeeded Mr. M. G. Mulroney as District Passenger Representative, Dallas, Texas.

Mr. G. R. Jenkins, has succeeded Mr. R. S. Henry as District Passenger Representative, Minn.

Sir William Scott and Sir Richard Bellingham Graham have been appointed directors of Head Wrightson (Teessdale) Limited, the largest subsidiary of Head Wrightson Co. Ltd.

We regret to record the death, on January 4, at the age of 39, of Mr. J. S. Fleuret, Sales Director, Northey Rotary Compressors, Limited.

Sir Percival Liesching has been appointed a director of the Automatic Telephone & Electric Co. Ltd.

Mr. E. Adams, Locomotive Engineer, Messrs. Livesey & Henderson, has retired after more than 50 years of service with the firm. He was previously with Kitson & Co. Ltd. During the 1914-18 war he served in the Royal Navy.

Dr. J. N. Aldington and Mr. S. E. Goodall have been appointed to the board of the W. T. Henley's Telegraph Works Co., Ltd. Sir Edward Crowe and Mr. A. W. C. McArthur have resigned their directorships. Mr. Goodall is Chief Engineer of the company.

Mr. Ernest G. Longman has been appointed to the board of the Hoffmann Manufacturing Co. Ltd., as an executive director in charge of technical sales. Dr. Frederick P. A. Garton has been appointed to a similar position in charge of health, safety & education.

Mr. G. N. Blades has been appointed Regional Manager, London, British Insulated Callender's Cables Limited, in succession to Mr. E. A. Sayers, who has retired. Mr. Blades has been succeeded, as Divisional Sales Manager (Rubber Cables), Leigh Works, by Mr. D. I. S. Hinton.

Mr. A. Broomhead has been appointed Assistant Managing Director of Thos. Firth & John Brown, Limited. He joined the company in 1926, and was appointed a director in 1953. He has also been appointed Chairman of the company's wholly owned subsidiary, the Firth Derihon Stampings, Limited.

Sir Stanley J. Harley has been appointed President of the Gauge & Tool Makers' Association for the year 1959. The Vice-Presidents will be Mr. A. L. Dennison, Mr. H. S. Holden, Mr. T. Ratcliffe and Mr. L. E. Van Moppes. Mr. G. P. Barrott has been appointed Chairman and Mr. R. Kirchner and Mr. H. G. Carmichael Wilson will be Vice-chairmen. The Hon. Treasurer will be Mr. J. C. Brown.

Mr. J. P. Lewis, formerly Sales Manager of Edgar Allen & Co. Ltd., Sheffield, and its subsidiary, British-Rema Manufacturing Co. Ltd., has been appointed General Manager of the British Rema Co. Ltd. Mr. T. R. H. Wadsworth has become Assistant General Manager. Mr. R. E. Sherwood, Assistant Manager of the Steel Department, Edgar Allen & Co. Ltd., has been appointed Manager.

Mr. E. W. Colbeck has been appointed Deputy Chairman of Hadfields Steels Limited in addition to Managing Director. Mr. G. Wood, Mr. F. Cousins, and Mr. G. J. Jenkins have joined the board. Mr. W. J. Gibson has been appointed Deputy Chairman of Hadfields Forgings Limited, Mr. G. Wood Managing Director, and Mr. T. Pease and Mr. D. R. Ward have joined the board. Major H. G. Freeman is now Deputy Chairman of Hadfields Foundry & Engineering Limited. Mr. F. Cousins is Managing Director. Additions to the board are Mr. F. Holmes and Mr. G. J. Jenkins.

Mr. A. Douglas Sharp has been appointed a director of the Brightside Heating & Engineering Co. Ltd.

Mr. C. N. Jennings, Superintendent of Foundry & Pattern Shop, Ransome & Rapier Limited, has retired.

Mr. A. M. Seggar has been appointed Lighting Engineer, Bristol Area, South-West Region, Philips Electrical Limited.

Mr. F. W. Spence, Managing Director, T. & R. Williamson Limited, has been elected President of the National Paint Federation.

Mr. George S. Sanders has been appointed head of the newly-formed Group Productivity Services Department, Solatron Electronic Group Limited.

Mr. Brian Gardner, a representative of the Dunlop Rubber Co. Ltd., in the Chelmsford area, has been appointed Commercial Vehicle Manager for the south of England.

Mr. R. J. W. Rudkin, General Manager of the Naval Yard, Vickers-Armstrongs (Shipbuilders) Limited, and Mr. A. L. White, General Manager of the Palmers Hebburn Works, have been appointed additional Directors.

Mr. Wilfrid Newland, Personal Assistant to the Managing Director of Simms Motor Units Limited, and also Associate Director in charge of Export, has been appointed Commercial Director of the company. Mr. H. G. Dunn has also joined the board.

Mr. R. Craig Wood has been elected a director of Associated Electrical Industries Limited. He has been Managing Director of A.E.I.-Hotpoint Limited since 1956 and, in this capacity, he will continue to have responsibility for the domestic appliance business of A.E.I. He is also chairman of A.E.I.-Gala Limited.

Mr. K. A. Hogan, a director of Powell Duffryn Limited, of Stephenson Clarke Limited, and other companies in the Powell Duffryn Group, will be relinquishing those directorships with effect from the end of March to take up another appointment. His advice will, however, continue to be available to the group.

Mr. L. Hawkins, Personnel Manager, Simms Motor Units Limited, has been appointed Chief Personnel Executive. The following appointments have also been made:—Mr. A. G. Baker as Personnel Manager and Mr. J. Peck as Education & Training Officer. Mr. D. F. Pierce, formerly Education & Training Officer, is to join Mr. A. Hess in the newly formed Public Relations Division.

Siemens Edison Swan Limited announce the following appointments in their new Cables Division, as part of the company's reorganisation: Mr. D. E. Beavan as Home Cable Sales Manager; Mr. R. G. Holland as Export Cable Sales Manager; Mr. D. G. Skinner as Telephone Cable Sales Manager; Mr. H. S. Peet as Distribution Equipment Sales Manager; Mr. J. A. C. Kendle as Wiring Accessories Sales Manager; Mr. J. C. E. Coomber as Contract Sales Manager; Mr. R. B. Tucker as Assistant Home Cable Sales Manager; Mr. H. E. Helwig as Associations Liaison Officer, and Mr. P. W. Kilroy as Special Projects Sales Manager.

Mr. Charles Watson, Sales Director, British Ermeto Corporation Limited, since 1954, has retired.

Mr. A. C. Vivian, Managing Director, Metal & Pipeline Endurance Limited, has recently joined the board of General Descaling Co. Ltd., an associated company.

Mr. W. D. Cartwright has been appointed Field Sales Executive, Steels Engineering Products Limited. He will be attached to the Home Sales Director's staff, London.

Mr. H. C. Tett, Managing Director & Chief Executive, Esso Petroleum Co. Ltd., has been appointed Chairman & Managing Director, following the retirement of Sir Leonard Sinclair.

Mr. H. P. Bingley has been appointed District Manager Sheffield, Mobil Oil Co. Ltd., in succession to Mr. T. N. Jackson, who assumes responsibility for the North Wales area.

Mr. Tom Nethersole, Sales Manager, Ferrybridge Office, Philidas Locknut Division, Whitehouse Industries Limited, has taken over the company's sales organisation throughout London, Middlesex, Surrey, Kent and Sussex.

Mr. Harold Hodgson has been appointed Company Secretary of the Tees Side Bridge & Engineering Works Limited, following the retirement of Mr. A. E. Reyer, who held the appointment for over 31 years.

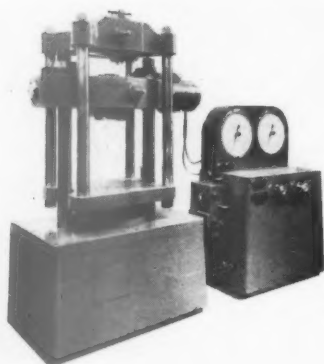
Mr. Harold Bateman has been appointed Technical Sales Engineer, H. W. Kearns & Co. Ltd., for North Derbyshire, Nottinghamshire, Lincolnshire and Yorkshire (except parts of the North Riding). Mr. Bateman recently represented Charles Churchill & Co. Ltd., in the North West.

Mr. James Simpson has been appointed Deputy Chairman of the Woodall-Duckham Construction Co. Ltd. He will carry special responsibilities relating to subsidiary companies within the group at home and overseas, and, in this connection, is making a six months' visit to Australia and New Zealand. Mr. E. N. Wenborn has been appointed a joint Managing Director of the company.

Cooke, Troughton & Simms Limited, a company of the Vickers Group, has purchased all the issued capital of C. Baker of Holborn Limited, optical instrument makers. The board of directors has been reconstituted as follows:—Mr. P. D. Scott Maxwell (Chairman); Mr. M. G. L. Curtiss (Managing Director); Mr. E. E. Kennaird; Mr. H. Wright. The secretary is Mr. J. Williamson. The name of the company will be changed, in due course, to C. Baker Instruments Limited.

Mr. J. Jack has been appointed Financial Director of Dorman Long & Co. Ltd. and of its subsidiary, Dorman Long (Steel) Limited. He has been a director of the parent company since 1956 and Chief Accountant for 14 years. Mr. E. T. Judge, Chief Engineer and a director of Dorman Long & Co. Ltd. since 1945, has been appointed Assistant Managing Director of Dorman Long (Steel) Limited. Mr. A. MacLeod has retired from his executive duties as General Manager of Dorman Long (Steel) Limited. He remains a non-executive director of Dorman Long and Dorman Long (Steel) Limited.

NEW EQUIPMENT AND PROCESSES



Hydraulic Testing Machine

WITH a range of testing speeds from

0 to 2 in. per minute, variable in stepless intervals, test loads up to 400,000 lb. in railway foundries, laboratories, research departments, and apprentice schools may be easily applied, removed, or held constant with the Olsen "L" type hydraulic testing machines, by manipulating two 8-in.-dia. handwheels. These control the oil feed to a piston/cylinder unit, enclosed in the base of the welded frame of the machine and fed by a direct-connected motor-driven gear pump in combination with an automatic valve to give uniform rates of load application.

The centre of gravity is low and there is no need for rollers or guides. It is claimed that the shock of breaking specimens is reduced by the method of construction and load application, despite the relatively low weight and low cost of the machine. It is built in five capacities: 60,000 lb., 120,000 lb., 200,000 lb., 300,000 lb., and 400,000 lb. All except the smallest have the crosshead adjusted by electric motor and they are of similar basic design. The illustration shows the largest size.

Tensile and compression tests are covered by the standard equipment of



flat grips, vee grips and a compression plate. Loads are indicated on two 16-in. dia. precision type hydraulic gauges which are provided with maximum pointers. Friction is held to an absolute minimum and the load is weighed within close limits.

The machines are built to Grade "A" accuracy in accordance with British Standards 1610 Part 1: 1958. A complete range of accessory testing tools is manufactured covering, for example, transverse, shear and bend tests.

Further particulars including price and delivery are available from the manufacturer under licence in Great Britain, Edward G. Herbert Limited, Atlas Works, Chapel Street, Manchester, 19.

Portable Pressure and Vacuum Tester

A NEW P.V. system test set now is available to check pressure and vacuum systems at positive and negative pressures within the range 1 lb. per sq. in. absolute to 115 lb. per sq. in. absolute, i.e., negative pressures 0-30 Hg. and positive pressures 0-100 lb. per sq. in.

Tests may be made with the tester in its case. Connection is made to a standard reference and the pump is operated to the required pressure. A comparison then is made between reference and test set gauges.

The self-sealing pump supplies positive and reduced pressures. Pressure lines connect the relevant sides of the pump to gauges and capped connections. Two atmosphere vent valves are provided. Each gauge is fitted with a choke to prevent sudden surges of pressure to the test set instruments.

The standard model is fitted with a pressure gauge covering 0-100 lb. per sq. in. Other ranges available include 0-25 lb. per sq. in., 0-50 lb. per sq. in. and other equivalents to 0-100 lb. per sq. in. The negative pressure gauge, ranged at 0-30 in. Hg., is standard for all test sets.

The pump is piston-operated and equipped with non-return valves designed to permit positive and negative pressures in the order of 1 lb. per sq. in. absolute to 115 lb. per sq. in. absolute. The negative pressure side automatically is sealed when operated on pressure and vice versa.

Four capped connections are mounted on the rear of the case; two for the pressure, and two for the reduced pressure, line.

The set is mounted on a metal base with rubber feet and is contained in a case equipped with a leather carrying handle. Dimensions are 16 in. x 7 in. x 4½ in. Weight is approximately 8 lb. The set is finished in grey stoved enamel.

Delivery is about six weeks from Bryans Aeroequipment Limited, 1, Willow Lane, Mitcham Junction, Surrey, from which company further details may be obtained.

Plastic-Coated Steel Sheet

STEEL sheet permanently covered on one side with a specially formulated P.V.C., known as Stelvetite, can be bent, formed, seamed, and deep drawn without damaging the coating. It can be joined mechanically by lock seaming, simple hook

joints, or riveting, and is suitable for interior trim and panelling of passenger vehicles. High frequency welding of the P.V.C. is possible and a system of twin spot welding on the steel side of the laminate, using a high current and rapid time cycle, can be successfully carried out without destroying the P.V.C.

The material has a high resistance to acids and alkalis and can be washed and cleaned with most detergents. It does not support combustion and is stable at higher temperatures than those associated with P.V.C. alone.

Stelvetite is available in steel gauges 26 to 16 (0.196 in. to 0.0625 in.) with a P.V.C. thickness of 0.014 in. Any colour can be supplied, provided the area ordered at one time is not less than 25,000 sq. ft.

The price varies according to the steel thickness and quantity ordered, but can be estimated at about 2s. 6d. a sq. ft. Delivery is ex-stock. Further details can be obtained from the manufacturer, John Summers & Sons Ltd., Howarden Bridge Steel Works, Shotton, Chester, Cheshire.

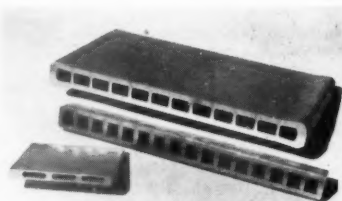
Surface Armour for Floorings

DECKSMETAL is a surface armour which should be suitable for use in conjunction with asphalt on loading banks where trouble sometimes is experienced, particularly during warm weather, with distortion or piling-up of the asphalt.

The armour, which can be used with mastic asphalt or rubber compound floorings, is manufactured in 4-ft. strips to permit easy and speedy assembly on site. A tongue and slot design facilitates fabrication into a continuous floor armour which fully stabilises the asphalt and provides a tough surface where heavy trucking problems are encountered.

The mesh is provided in 14-gauge material 1 in. deep, each cell measuring 3 in. It is treated with a bitumen compound before despatch to ensure easy adhesion to asphalt. A flat support strip is provided for use on soft underlays.

Delivery is ex stock from Causeway Reinforcement Limited, 66, Victoria Street, London, S.W.1.



Multi-hole Extruded Sections

STRESS-CARRYING multi-hole extruded sections in relatively high-strength hiduminium, produced to normal extrusion tolerances, should help locomotive, carriage, tanker, and refrigerator wagon designers to solve problems of heat transfer and dissipation where it is desired that the heat exchanger should be made to form part of the structure of a larger assembly.

High Duty Alloys, Limited, has introduced stress-carrying extrusions of this

kind possessing good resistance to corrosion, so permitting the use of a wide variety of cooling or heating media. Excellent welding characteristics and light weight are important advantages of aluminium for duties of this kind. The smooth exterior surfaces of the sections make them ideal for forming the floors of large refrigerators or conversely, in heated vats for fermentation. Produced on a smaller scale, the sections can be used as heat exchangers for the cooling of instruments and electronic equipment. In fact, this development is claimed by the manufacturer to have wide scope in countless applications.

Further details and technical advice are available from the Application Development Department of High Duty Alloys, Limited, Slough, Buckinghamshire.

Anti-corrosive treatment

A NEW treatment now available for high-duty protection of iron and steelwork against corrosion in marine atmospheres should be effective for use on bridges, sidings in dock areas and other railway structures liable to contact with excessive moisture.

The treatment calls for the application by brush of one priming, one undercoat, and one finishing coat of "Pitamarine" at intervals of 24 hours.

Covering capacities are as follows: Primer—80 to 90 sq. yd.; undercoat—80 to 90 sq. yd. per gal.; finisher—60 to 70 sq. yd. per gal.; aluminium—100 sq. yd. per gal. All quantities are approximate.

Colours available are cream, red, black, green, grey, dark grey, and aluminium. Approximate weights per gal. are: primer—20½ lb.; undercoat—18 lb.; finisher—11½ lb. The full system provides a film thickness of 5½ thou.

Application must be to a clean, dry surface. The surface of the primer and undercoat must be wiped free of any moisture before use in each case. The primer must be quickly applied to avoid atmospheric contamination of the prepared surface.

It is claimed that the treatment is more durable than red lead/alkyd system and that its corrosion resistance is higher.

Prices per gal. together with approximate cost per sq. yd., are as follows: primer—55s. 8d.; undercoat—52s. 6d.; 7½d.; finisher—52s. 6d.; 9½d.; thinners—17s. 6d. Material cost per sq. yd. of treatment is approximately 2s. 1½d.

Delivery is ex stock from Allweather Paints Limited, 36, Great Queen Street, London, W.C.2, from which company further details may be obtained.

Mechanical Cleaner

"THE Magpie" is a fully mechanised vacuum and brush sweeping vehicle which can cover a large concourse in a few hours, taking up litter, dust, and even bottles.

Only one operator is needed for the machine, the use of which should make station cleaning easier. When in action, the sweeper does not raise dust and therefore no sprinkling of water is required. Drive is by battery.

The illustration shows the "Magpie" in use at Waterloo Station, Southern Region. This is the first "Magpie" to be used on British Railways.

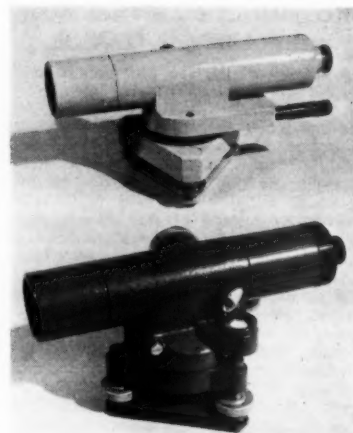
Delivery is three to four weeks from Cimex Fraser Tuson Limited, Orpington, Kent.

Self-Aligning Levels for Surveyors

TWO similar British automatic levels for surveyors and civil engineers are being produced as a result of joint technical research by Cooke, Troughton & Simms Limited, whose instrument, the S700, is shown in the upper part of the illustration, and Hilger & Watts Limited. The last-named company's product is called the Autoset and may be seen at the bottom of the illustration. Both contain a novel and patented form of optical stabiliser to effect automatic compensation for any small errors in levelling. Thus the care which is necessary in setting up a conventional spirit-level instrument is no longer needed and much time and fatigue is saved. Once the instruments have been approximately levelled by means of the circular spirit vial, the stabiliser sets the line of sight in a horizontal plane with precision, speed, and certainty.

The method of compensation obtains the correction for residual tilt of the instrument by purely optical means, and this is claimed to have advantages over other automatic methods recently developed on the Continent. The moving part of this compensator carries two reflecting prisms and is suspended by four flexible metal strips forming a frictionless yet robust flexure-pivot. Total movement of the swinging part of the compensator is restricted to 20 minutes of arc by a damper which also serves to take the weight of the swinging prism mount when the instrument is in transit. Both makes of telescope are of the internal focusing type, constructed to allow the stabiliser to be housed between the focusing lens and the reticule. By virtue of the prism system the observer sees an erect view of the measuring staff.

The two instruments differ only in mechanical design. Each has a three-screw levelling base, circular bubble for preliminary levelling, azimuth clamp and tangent screw, and optical horizontal circle. A parallel plate micrometer attachment can be provided having a range of .02 ft. for measuring the interval between the reticule line and the nearest division of the staff directly to .001 ft.



The telescope magnification is $\times 32$, aperture 1½ in., field of view 1 deg. 20 min., short focusing distance 6 ft., accuracy of stabiliser 1 sec. of arc., weight 6-6½ lb.

Extensive trials have been undertaken to confirm that the instruments will give accurate results in the field under all conditions, including temperature variations between -30 deg. C. to +50 deg. C. It is claimed by the manufacturers that the stabiliser can withstand continuous vibration and bumping. Use of an automatic level doubles the speed of observation, and reduces the risk of accidental error. An accuracy of .02 ft. per mile is attained easily and, by taking usual care, an average closing error per mile of .004 ft. is attainable.

The price in Britain of either make of instrument is £150 complete with tripod and carrying case; if fitted with horizontal circle for laying off angles, £175. Deliveries will commence in two to three months.

Further details may be obtained from Cooke, Troughton & Simms Limited, York, and Hilger & Watts Limited, 99 St. Pancras Way, Camden Road, London, N.W.1.



Reconstruction of Sea Wall near Abergele, L.M.R.

A section of the sea wall alongside the Chester to Holyhead main line of the London Midland Region, between Abergele and Rhyl, is being reconstructed after more than 50 years. The wall consists of a clay-cored embankment with heavy stone-pitched slopes down to the level of the beach shingle. Over the years the sea has removed much of the shingle which protected the foot of the wall and has been able to reach the stone-pitched facing. Lately voids have been caused by the washing away of the clay core under the pitching. Remedial work, whenever necessary, has been put in hand and major breaches prevented.

It has been decided to repair completely a 950-yd. section of the sea wall at this point. Concrete will be pumped into all voids and the pitched slopes of the washed out sections will be renewed. Old rail and timber groynes will be erected along the beach to trap shingle moved by coastwise drift, and so to rebuild the protection to the toe of the embankment.

The work is expected to take 18 months. It will be carried out under the supervision of the District Engineer, Bangor, London Midland Region.

Delays to L.T.E. Underground Trains

A warning to passengers not to repeat the refusals to leave London Transport Underground trains, as was done recently, was given on January 9 by Mr. B. H. Harbour, Member of London Transport Executive for operations, at a Press conference.

"I must give notice," he stated, "that if passengers will not leave trains when requested to do so for good reasons, they will have to remain in those trains and go to some other place." He said there was no question of any prosecution, but that holding open pneumatically-operated doors was an offence under the by-laws.

If the demonstrations were allowed to go any further L.T.E. "would be guilty of being completely indifferent to the best interests of the vast majority of our passengers." The proper procedure for complaints was to write to L.T.E.

It was considered by London Transport, he added, that the train service was functioning efficiently, though it fell short from time to time from that degree of perfection for which they strove, like any other enterprise.

The number of detrainments averaged three a day for each of the six Underground lines, he continued, out of 500 trains making 6,500 trips a day. Everything possible was being done to reduce this figure.

Failure of Equipment

The reason for the bulk of the detrainments—for about 15 or 16 out of the 18 a day—was failure of equipment. On the Central, Piccadilly, and Metropolitan Lines the rolling stock was getting old. The complete re-equipment of the Central and Piccadilly Lines was in hand and would be completed by 1963 and 1961 respectively. On the Metropolitan Line the old stock compartment trains were to be replaced by modern stock by 1962.

In most cases the delay occasioned to passengers was "really negligible." A second cause of detrainments was an obstruction on the line, which necessitated

the reversal of trains as on Thursday night. A third reason was when a service was running late a train had to be reversed to maintain a reasonable service in the other direction.

As to complaints about staff, Mr. Harbour pointed out that with 80,000 there were bound to be some failings, but that most were good public servants.

Passengers wanted to know the reasons for a delay, but immediate explanations which might be ill-founded had to be resisted, and reasons could not be found in a matter of seconds.

In a statement issued next day, London Transport announced that arrangements would be made for a fuller explanation to be given of a delay, when one occurred, as soon as accurate information was available, besides information on the probable length of the delay and, where necessary, alternative routes for passengers.

Expenditure on new communications equipment will be required before this can be put into general effect, and the London Transport Executive has approved Mr. Harbour's proposal that plans for installation should be put in hand forthwith.

Rebuilding of Esk Viaduct, L.M. Region

The Esk Viaduct, 6½ miles north of Carlisle on the Carlisle to Glasgow main line of the former Caledonian Railway, and now in the London Midland Region of British Railways, is being rebuilt as a new concrete deck carried by longitudinal steel girders supported on concrete pile bents. The new structure will have 36 spans varying from 22-ft. flood openings to 30 ft. over the river.

Re-use of Existing Girders

The pile bents will be placed between the existing piers, and the existing girders will be re-used wherever possible. Piling across the river has already begun and it is expected that weather permitting, the whole job will take about 18 months.

The existing viaduct is 355 yd. long, has 30 flood openings of some 21 ft. each, seven river spans of some 40 ft., and consists mainly of longitudinal girders with a timber floor resting on sandstone piers. These piers are part of the original structure, built in 1847 when the line was opened. The existing steel girders were placed when the superstructure was reconstructed in 1905.

The present structure has almost reached the end of its useful life. The piers, which are rapidly deteriorating, have caused difficulties intermittently during the past few years. During heavy rain of last winter serious trouble arose in several piers supporting the river spans, and despite extensive remedial measures this has spread. The cause is considered to be slight settlement of the foundations coupled with the weathering and ageing of the masonry piers accelerated by the presence of sandstone blocks of inferior quality. From detailed examinations made of both structure and the ground supporting it, it is clear that complete reconstruction is necessary.

The rebuilding is being carried out under the general supervision of Mr. A. N. Butland, Chief Civil Engineer, London Midland Region. The contractor for the piling is the Cementation Co. Ltd. The remainder of the work is being performed by the Region.

Outwards Mails and Parcels at Euston

Disappearance of parcel and mail barrows carrying outward consignments at Euston Station, British Railways, London Midland Region, is foreshadowed by some further structural improvements, work on which has already begun. By the end of this year passengers will be able to approach the booking offices and departure platforms without being impeded by long trains of barrows, which have caused congestion and inconvenience.

Mail which now encumbers the concourse is to be brought direct into the present railway parcels office on No. 11 platform and loaded direct into vans waiting there. A new building above the station is to be built for the sorting and despatch of railway parcels which will be sent down by overhead lifts to the respective platforms for loading.

All road vehicles carrying parcels, G.P.O. letter mail, and newspapers will enter the station by the existing entrance in Cardington Street and empty vans, and so on will leave the station by a new exit in Amphil Square leading to Hampstead Road.

Vans carrying parcel post will be received at a new sorting depot to be constructed at Amphil Square. After sorting at this depot the mail bags will be placed on an overhead conveyor, spanning the main departure lines, which will discharge them on the appropriate platforms.

Strengthening Gillingham Tunnel, Southern Region

(Concluded from page 72)

The trolleys containing the loaded spoil skips are taken to the dumping ground on each side of the line within the limits of the temporary crossovers, where the skips are lifted off by a K.L.44 mobile crane and discharge into a dumper which proceeds along the tipping site where the spoil is deposited.

For mixing the concrete, two diesel-driven 10/7 mixers are installed in the cess at the side of the track. These machines are mounted on runners at a suitable height to discharge the concrete direct into the trolleys on the occupied line. The specially graded all-in aggregate is off-loaded on to stages in quantities of 200 tons at a time on each side of the concrete mixers, and as the aggregate is used up the concrete mixers are moved along to avoid unnecessary handling of the aggregate.

Cement is stored in sheds on each side of the line just clear of the aggregate piles. Each shed can accommodate 40 tons of cement. Water is tapped from a spring situated above the tunnel and stored in a tank near the concrete mixers.

Temporary platforms have been erected at the western end of the tunnel for the use of the men employed on the works and arrangements have been made for special train stops at the start and finish of each shift.

The work is under the general direction of Mr. A. H. Cantrell, Chief Civil Engineer, British Railways, Southern Region

Train Service Alterations

Among various alterations taking effect on the Western Region from January 5, the 12.15 p.m. sleeping car train from Paddington to Penzance starts at 12.30 a.m., but reaches Plymouth at 4.55 a.m., 8 min. later only, and the Penzance arrival is unchanged at 7.50 a.m. The 9.30 a.m. from Paddington to Plymouth calls additionally at Westbury, 11.14/11.16 a.m., and is 7 min. later at Taunton, 13 min. later at Exeter (12.48 p.m.), and 9 min. later at Plymouth (2.9 p.m.). The 3.30 p.m. from Paddington to Penzance calls at Westbury (5.9/5.11 p.m.) instead of slipping a coach there, and no longer carries a through coach for Weymouth; times from Taunton onwards are unchanged. The 11 a.m. from Penzance to Paddington calls additionally at Totnes at 2.37 p.m.

The new 12.45 a.m. all-sleeping-car train from Paddington to Milford Haven is the first daily service on record to be run without any publicly booked stop between Paddington and Swansea, reaching there at 5.45 a.m., 1½ hr. in advance of the 1 a.m. down, on which the Carmarthen sleeping cars have been run until now. Stopping thence at Llanelly, the 12.45 reaches Carmarthen at 7 a.m. (110 min. acceleration on the 1.0 a.m. from London), but the sleeping cars are then held for attachment to the 7.55 a.m. stopping train from Carmarthen to Milford Haven, arriving at 9.13 a.m. In the reverse direction, however, the sleeping car train is a new working from Milford Haven, at 10 p.m. (instead of the previous 6.30 p.m. connection to the 8.31 p.m. from Carmarthen); departure from Carmarthen is at 11.35 p.m. and 12.45 p.m. from Swansea, from which there is a non-stop run to Paddington, reached at 5.30 a.m. This is an acceleration of 2 hr. 40 min. from Milford Haven, 2 hr. 14 min. from Carmarthen and 2 hr. 20 min. from Swansea.

The 8.10 a.m., 10.55 a.m. and 7.25 p.m. from Bristol to Portsmouth now terminate at Salisbury, and similarly the 8.30 a.m., 10.34 a.m. and 2.45 p.m. from Portsmouth to Bristol start from Salis-

bury. Southern Region connections between Salisbury and Portsmouth are made by the even-interval diesel service. Passenger train service is withdrawn from the Chepstow, Monmouth and Ross-on-Wye branches.

Numerous local trains operating in the Bristol area, hitherto conveying second class passengers only, now include first class accommodation.

Southern Region

Besides the train service changes announced in our January 2 issue, from January 5 the Southern Region has withdrawn Pullman car facilities from the 6.4 p.m. from London Bridge to Worthing and Littlehampton, and buffet cars from the 9.28 a.m. Victoria to Brighton, the 5.43 p.m. London Bridge to Worthing and Littlehampton, the 6.46 a.m. West Worthing to London Bridge, the 7.59 a.m. Seaford to Victoria and the 8.6 a.m. Brighton to Victoria. Buffet cars are substituted for Pullman cars in the 7.40 and 10.25 a.m. from Brighton to London Bridge and Victoria respectively, and there is an additional buffet car service at 9 a.m. from London Bridge to Brighton.

In the Western Section of the Southern Region, as the result of the withdrawal of the 9.37 p.m. from Southampton Central to Wimborne, the 7.30 p.m. from Waterloo to Bournemouth West now calls at all stations from Totton onwards, and reaches Bournemouth West at 10.59 p.m., 32 min. later than previously.

In the Eastern Section an additional train runs from Charing Cross at 6.20 p.m. to principal stations to Hastings, arriving at 7.55 p.m. The 5.5 p.m. from Cannon Street also carries a through portion, detached at Tunbridge Wells, for stations to Hastings. On Fridays an additional train is run from Charing Cross at 6.44 p.m. to Tonbridge, Ashford, Folkestone, Dover and Deal. On Sundays the 4.18 p.m. from Margate via Dover and Folkestone starts 12 min. later and reaches Charing Cross 14 min. earlier, at 7.14 p.m.

German Federal Railway Accelerations

With the introduction of the summer timetables on May 31, some very substantial accelerations are planned over certain of the main lines of the German Federal Railway, as a result of extension of electrification and, over other routes, of the availability of more diesel locomotives. The speed limit over certain sections is being raised from 75 to 87 m.p.h., and the intention is to raise the limit later to 100 m.p.h. over suitably aligned stretchers of the Cologne-Mannheim - Basle, Munich - Augsburg - Ulm, Frankfurt-Hanover-Hamburg, and other main lines, so restoring the maximum permissible speed that was in force over "Special Class" main lines in 1938.

The southbound "Rheingold Express," leaving Cologne at 10.10 instead of 10.5 a.m., but due in Basle Swiss Station at 3.43 instead of 4.34 p.m., will average 59.4 m.p.h. between Cologne and Basle (Badischer) Bhf. Northbound, the average speed from Basle station to Cologne will be 61.2 m.p.h. including stops. The heavier "Loreley Express," leaving Cologne at 11.24 a.m., as now, will be due in Basle at 5.30 p.m., 56 min. earlier; northbound, leaving Basle at 12.57 p.m. (44 min. later), it will reach Cologne at 7 p.m., 12 min. earlier. The "Holland-Italian Express" now 11.10 p.m. from Cologne, will leave there at midnight, 50 min. later, but reach Basle at 6.22 a.m., as now. Northbound acceleration by 44 min. will give arrival in Cologne at 6.3 a.m. Another much accelerated train will be the "Riviera Express," at 7.30 instead of 6.52 p.m. from Cologne but with the Basle (Swiss) arrival at 2.10 a.m. as now; there will be a 37 min. acceleration northbound.

The cancellation through insufficient patronage of the diesel service between the Hook of Holland and Hamburg, which made possible the London-Hamburg journey via Harwich/Hook without overnight travel, will allow a 60 min. later departure of the "Day Continental" from Liverpool Street (10.5 instead of 9.5 a.m.) and a 67 min. earlier arrival on the return journey (8.23 instead of 9.30 p.m.) There will also be a substantial acceleration of the connecting services through Germany.

The "Austria Express" from the Hook of Holland to Munich, Salzburg, Villach and Klagenfurt, for example, will reach Klagenfurt at 2.52 p.m., 45 min. earlier (an acceleration of 1½ hr. from London), and will connect at Villach with the "Venezia" diesel train, due in Venice at 6.35 p.m. In the opposite direction the acceleration from Klagenfurt to London will be 2½ hr.

Also in connection with the Harwich-Hook night service, the "Holland-Scandinavia Express" will give an acceleration of 36 min. to Copenhagen (10.56 p.m.) and 110 min. to Stockholm (9.45 a.m. next day); southbound the departure from Stockholm will be 2 hr. later than now, at 8.25 p.m.

BUENOS AIRES UNDERGROUND RAILWAYS.—Eng. Pedro Gervasio Fleitas, Administrator General of Buenos Aires Transport, stated in a recent television interview that 120 new coaches would be placed into service on the Buenos Aires Underground railways within the next three years. The construction of new lines will reach a total of 89 miles within eight years, and it is hoped that income will exceed expenditure by 800 million pesos a year by that time.

First Train over Barking Flyover



First freight train crossing the Barking flyover on the up line hauled by a type "2" Brush 1,200 h.p. diesel-electric locomotive (see last week's issue also our issue of March 21, 1958)

Contracts and Tenders

Diesel shunting locomotives for British Railways

The British Transport Commission has placed orders for 102 diesel shunting locomotives and 37 sets of power equipment, including diesel engines, gearboxes, and ancillaries, for locomotives to be erected in railway workshops, as part of the programme for the replacement by diesel locomotives of all steam engines employed in shunting duties on British Railways.

All the 139 diesel shunting locomotives now ordered will be in the 200-225-h.p. range, 36 of them with hydraulic transmissions and the remainder mechanical transmissions, embodying a conventional gearbox. The Scottish Region is to have 56 of the locomotives, including those with hydraulic transmission, the North Eastern Region 58, the Southern Region 13, and the Western Region 12. Included in these allocations are the 37 shunting locomotives which are to be built in British Railways' workshops, of which 25 will be erected at Doncaster for the North Eastern Region, and 12 at Swindon for the Western Region.

Details of the orders are as follow:—

The Drewry Car Co. Ltd.: 13 204-h.p. 0-6-0 diesel-mechanical shunting locomotives, and 37 sets of power-equipment for 200-h.p., 0-6-0 diesel shunting locomotives to be built in the British Railways works.

North British Locomotive Co. Ltd.: 36 225-h.p., 0-4-0 diesel-hydraulic shunting locomotives.

Andrew Barclay, Sons & Co. Ltd.: 20 204-h.p., 0-4-0 diesel-mechanical shunting locomotives.

The Hunslet Engine Co. Ltd.: 33 204-h.p., 0-6-0 diesel-mechanical shunting locomotives.

The Argentine State Railways has placed a contract with Gruppo Aziende Italiane Argentine, a consortium of Italian and Argentine firms, for 280 1,300-h.p. diesel-electric locomotives. See editorial reference on page 59.

Matisa Equipment Limited has received a contract from the South African Railways for 10 type "B27" ballast tampers and auxiliary equipment. The value of the contract is £133,350, and delivery will be made in 40 weeks.

Leyland Motors Limited has received a repeat order from Coras Iompair Eireann for 30 double-deck buses with fully-automatic transmission. The vehicles are 30 ft.-long Leyland Titan "P.D. 3-2" models.

The Special Register Information Service, Export Services Branch, Board of Trade, has received calls for tenders as follow:—

From Portuguese East Africa:

1 travelling platform for railway workshop.

The issuing authority is the Ports, Railways & Transport Department, Lourenco Marques. The tender No. is A/CFB/1/1-5/1959. A provisional deposit of Esc: 30,000 must be made by tenderers. The closing date is February 11, 1959. Local representation is essential. The Board of Trade reference is ESB/32158/58.

100,000 galvanised rail spikes
5,000 rail bolts, with nuts and washers, round head, for R.B.S. rails
5,000 rail bolts, with nuts and washers, square head, for R.B.S. rails
10,000 rail bolts, with nuts and washers, for A.S.C.E. rails
20,000 track anchors (Henggi type)
5 monobloc frogs, for 30 kg./m R.B.S. rails, 1:9, right
5 monobloc frogs, for 30 kg./m R.B.S. rails, 1:9 left
10 monobloc frogs, for 30 kg./m R.B.S. rails, 1:8, right
10 monobloc frogs, for 30 kg./m R.B.S. rails, 1:8, left
12 sets of points, complete, 1:9, right

12 sets of points, complete, 1:9 left
10 pairs of short rails for points, 1:9
10 pairs of short rails for points, 1:8
The issuing authority is the Ports, Railways & Transport Department, Lourenco Marques. The tender no. is A/CFB/1/1-3/1959. A provisional deposit of Esc: 40,000 must be made by tenderers. The closing date is April 1, 1959. Local representation is essential. The Board of Trade reference is ESB/32159/58.

From India:

11 items of signalling equipment.
The issuing authority is the Director General of Supplies & Disposals. The tender No. is WP2/4446/11/B/RC. Bids should be sent to the Director General of Supplies & Disposals, Shahjahan Road, New Delhi. The closing date is February 3, 1959. The Board of Trade reference is ESB/31965/58.

From Pakistan:

900 tons of medium manganese/carbon steel rails 90 "R" B.S.S. flat bottom in 42-ft. lengths
1,400 tons of medium manganese/carbon steel rails 75 "R" B.S.S. flat bottom in 42-ft. lengths.

The issuing authority is the Ministry of Communications (Railway Division) Government of Pakistan. The tender No. is 58/1860/3/S-11. Bids should be sent to the Director General (Railways) Railway Division, Ministry of Communications, Government of Pakistan, Karachi. The closing date is January 26, 1959. Local representation is essential. The Board of Trade reference is ESB/608/59.

Further details regarding the above tenders, together with photo-copies of tender documents, can be obtained from the Branch (Lacon House, Theobalds Road, W.C.1).

The Victorian Government Railways reports that the closing date of the call for tenders for the designing of circuits and the manufacture, supply, delivery, construction, erection, and installation of automatic block signalling equipment between Dynon and Woodonga, Victoria, with C.T.C. for use in part of the Melbourne-Sydney standard gauge railway, reported in last week's issue, has been postponed to May 27, 1959.

Electric Locomotive for Southern Region



The first 2,500-h.p. Bo-Bo electric locomotive for the Kent Coast electric services to Dover and Ramsgate starting in June (see editorial reference in our issue of January 2)

LONDON MIDLAND REGION NOVELTY EXCURSIONS IN 1959.—Arrangements have been made by British Railways, London Midland Region, to provide novelty outings during 1959, some of which will be of interest particularly to photographers, cyclists, and those who like an unusual weekend trip. Amateur cameramen and women from several places in the Midlands and North West will be offered special excursions to beauty spots and substantial prizes will be awarded for the best pictures taken during the outings. Some of the departure points are Nottingham, Derby, Burton-on-Trent, Blackpool, Colne and Barrow. Cyclists are to be taken by special trains to picturesque parts of the countryside not normally within reach on a day's cycle ride, and from there they will be conducted on cycling tours of the district.

Notes and News

British-built Locomotives in Nyasaland.—

The wheel arrangement of the "G" class locomotives of the Nyasaland Railways is 2-8-2, and not 4-6-2, as was given in error on page 44 of our January 9 issue.

Institute of Transport: Informal Luncheon.

—An informal luncheon will be held at the Connaught Rooms, Great Queen Street, London, W.C.2, at 12.30 for 1 p.m., on Tuesday, February 3. The address will be given by Sir Ralf Emerson, Chairman, Nigerian Railway Corporation.

Christmas Road Casualties.—Casualties on the roads of England and Wales during the Christmas holiday period, December 24-27 inclusive, totalled 4,107, 805 more than at Christmas, 1957. Deaths numbered 86, an increase of six.

New Company to Promote Cummins Diesel Engine Sales.—

A new company, Cummins Diesel International Limited, has been established by the Cummins Engine Company Incorporated to promote the sale and service of Cummins diesel engines in international markets. The new company has its headquarters in Nassau, in the Bahama Islands, with additional offices soon to be opened in Europe and South America. While Cummins Diesel International Limited is a wholly-owned subsidiary of Cummins Engine Company Incorporated, it will be independently staffed and operated.

"Railway Tavern" Re-decorated.—In October, 1956, the saloon bar of the "Railway Tavern," Liverpool Street, London, E.C.2, was transformed. Models of early steam engines, a reconstruction of the Rocket, and the arms used by railway companies before nationalisation were incorporated in the decorations. The railway theme now has been continued in the restaurant. Here, a collection of early prints and photographs, collected by Richard Lonsdale-Hands Associates on behalf of Whitbread's, is on show. The prints, which are in fine condition, include aquatints, coloured litho-

graphs, and mezzotints, and there also are a coloured etching, an oleograph, and an original watercolour. The collection, which covers many former systems, is not confined to past or present Eastern Regional territory. In addition to the prints, there are maps, newspaper and magazine cuttings, and specimens of railway literature.

Withdrawal of Freight Train Facilities from Burnt Mill and Roydon Stations.—

The Eastern Region of British Railways has announced that freight train facilities will be withdrawn from Burnt Mill and Roydon stations on January 26, 1959. Both stations are on the Liverpool Street-Cambridge main line. Alternative facilities are available at St. Margarets, Hertfordshire; Broxbourne & Hoddesdon; and Harlow stations.

Russian Aid for Building Railway in Syria.

—Construction of a line from the port of Latakia some 400 miles eastwards to the Jezira district of Syria, is reported to have been decided by the Governments of the United Arab Republic (Syria) and the U.S.S.R. Technical assistance and equipment would be provided by Russia in accordance with the Syro-Russian aid agreement of 1957. The line is expected to take six years to complete.

Heavy Bookings for Scottish Cruise by B.R. "Duke" Steamer.—

British Railways, London Midland Region, reports that the nine-day cruise of the Scottish Lochs by s.s. *Duke of Lancaster* arranged for September 19 is nearly fully booked. Normally the vessel carries 1,800 passengers, but only 340 will be conveyed on the cruise. The ship is also to cruise the Dutch, Belgian, and French coasts on three occasions in June. Bookings for these also are reported to be going well.

Additional Dublin-Bray Services.—

To compensate for the withdrawal of the passenger train service between Bray and Harcourt Street Station, Dublin, Coras Iompair Eireann is now running additional trains during the business hours between Amiens Street, Westland Row, Bray and

Greystones. Between 7.40 and 9.27 a.m. inclusive there are now five trains instead of four from Greystones to Dublin, seven instead of six from Bray, and nine instead of eight from Dalkey, and some of the trains from Dalkey, and beyond are accelerated by the omission of stops. Two additional trains also are being run in the outward evening service, at 5.28 p.m. from Amiens Street to Dun Laoghaire and at 6.15 p.m. from Amiens Street to Dalkey, and certain other trains have stops omitted and their runs extended.

Institute of Transport Congress, 1960.—

To mark the 40th session of the Institute of Transport, founded on November 3, 1919, the next Congress of the Institute will be held in London. The dates provisionally selected are April 26-29, 1960. It is hoped that, in addition to the usual attendance of members resident in Great Britain and Ireland, the 1960 Congress in London will attract a special attendance of members from overseas.

Mobile Rail Enquiry Bureau.—

As an aid to planning summer holidays in advance, the Eastern Region of British Railways is arranging for a mobile rail and road enquiry bureau to tour Sheffield and the adjacent towns of Rotherham and Chesterfield, during March and April. The staff of the bureau will be able to advise on the various facilities available from the Sheffield area to holiday resorts throughout Great Britain, but with particular reference to the North Wales resorts, including the numerous attractive tours in that area.

Simmonds Aerocessories Limited German Subsidiary.—

Simmonds Aerocessories Limited, a member of the Firth Cleveland Group, has announced formation in Germany of Deutsche Firth Cleveland G.m.b.H., as a subsidiary. The new company has taken over extensive offices at Neckarauerstrasse 245-53, Mannheim (telephone: Mannheim 41458, telegraphic addresses: "Aerocessim, Mannheim" and "Fircleve, Mannheim"). It has been set up in anticipation of the establishment of the Common Market and the Free Trade



Prints and photographs at the entrance to the restaurant at the Railway Tavern



Some of the aquatints, coloured lithographs, and sketches in the restaurant

Area, and will undertake the marketing in Germany of most of the products of Simmonds Aerocessories Limited besides those made by Simmonds British subsidiary, Firth Cleveland Instruments Limited. Mr. A. A. Puth has been appointed General Manager of Deutsche Firth Cleveland G.m.b.H. He is assisted by Mr. H. Seiler as Surform Sales Manager. All the products handled by the new company will continue to be made in Treforest, Glamorganshire.

Greater Number of Vehicles on Roads in Britain.—The number of motor vehicles counted on trunk and Class I roads in England and Wales during the traffic census in the week ended August 17, 1958, was 14 per cent greater than in the corresponding week of 1957. Private motor-cars showed an increase of 17 per cent and heavy goods vehicles an increase of 6 per cent. The number of buses and motorcoaches was about the same as in 1956 and 1957. The census was the third of a series of annual checks made by the Ministry of Transport & Civil Aviation.

British Standard for Split Cotter Pins.—In the revised British Standard publication B.S.1574:1958 the nominal length of the pin is now defined as the distance from the underside of the eye to the extreme end of the short leg in common with American and Continental standards. The sizes of mild steel cotter pins in diameters from $\frac{1}{8}$ in. to $\frac{1}{2}$ in. listed as standard are based on this principle. An appendix gives the metric sizes likely to be included in a recommendation by the International Organisation for Standardisation, together with their nearest British Standard equivalents. Copies, price 4s., may be obtained from the British Standards Institution, 2, Park Street, London, W.1.

"Business Travel" Season Tickets Available to More Consignors.—A "business travel" season ticket is now available to any firm or undertaking which makes a direct payment of £2,500 a year to British Railways in rail merchandise charges. The qualifying amount previously was £5,000 a

year. These tickets can be used for an unlimited number of journeys over a route or group of routes, chosen by the holder, covering not less than 100 miles. The cost is about 25 per cent less than an ordinary season ticket over the same route. First and second class tickets are obtainable, available from three to twelve months. They are issued to principals of firms or to representatives fully employed on the firm's business. A further ticket may be purchased against each additional merchandise payment of £2,500 a year by the same firm.

Passenger Train Collision in Portugal.—About 50 passengers were injured, 12 seriously, when a passenger train collided with a locomotive near Pinhal Nova, east of Lisbon, Portuguese Railways, last Sunday. It was the second train accident at the same place within 24 hr.

French National Railways Self-drive Hire Cars.—The new basic hire charges per day for S.N.C.F. self-drive hire cars applicable in consequence of the recent re-valuation of the French franc are as follows: For less than 15 days and for 15 days and over, respectively: Citroen 2CV £1 10s. and £1 6s.; Renault 750 £1 13s. and £1 9s.; Renault Dauphine £1 19s. and £1 15s.; and Simca Aronde £2 3s. and £1 19s. The arrangements whereby a 10 per cent reduction was allowed on the amount of these hire charges payable in the U.K. and those paid in France with sterling travellers' cheques have been cancelled by the French Government.

Reconstruction of Nantwich Road Bridge, Crewe.—Work is well advanced on the reconstruction of nine of the 12 spans of the bridge which carries the roadway over Crewe Station, British Railways, London Midland Region, to give sufficient headroom for the overhead wiring for electric trains. The reconstruction of the bridge is being carried out in two main sections each of which is being built in halves, thus ensuring that half of the bridge is open to single line road traffic throughout

the programme. The southern half of the spans has now been reconstructed in reinforced concrete and is already open to road traffic. Work is now in progress on the removal of the existing portions of the spans on the North side of the bridge.

Steel Company of Wales Limited.—In his report circulated to shareholders of the Steel Company of Wales Limited, the chairman, Mr. Harald Peake, speaks of a marked depression in both the British and American steel industries and yet a small increase has been achieved in the turnover of the company. A final dividend and a special interim dividend which will bring a return to the holders of risk capital to 9 per cent are recommended. The meeting will be held in London on February 2.

New Addresses of L.T.E. Officers.—The following officers of London Transport are now located at L.T.E. headquarters at 55, Broadway, Westminster, S.W.1, instead of, as formerly, at Bell Street, Reigate, Surrey: Mr. G. Fernyough, T.D., M.Inst.T., Operating Manager (Country Buses & Coaches); and Mr. W. I. Kirshner, Divisional Engineer (Country Buses & Coaches). Mr. H. F. Hutchison, Publicity Officer, is now located at Griffith House, 280, Marylebone Road, London, N.W.1, instead of, as formerly, at 55 Broadway, Westminster, S.W.1.

Turner & Newall Limited Report.—Sir Walker Shepherd, Chairman of Turner & Newall Limited, in his circulated statement reports that demand for the general range of asbestos textile products of Turner Bros. Asbestos Co. Ltd. was progressively affected during the greater part of the year by the general decline in trading activity, but showed signs of some recovery by the end of the period. Export turnover again broke the record established in the previous year, partly because of substantial orders from Russia for rubber transmission belting. Despite more intensive competition, the turnover of Ferodo Limited attained a new high level, with both home and export markets showing an increase on last year's figures. Group trading profit for the year ended September 30, 1958, was £11,727,116 (£12,873,321), and the profit for the year after taxation amounted to £5,973,524 (£5,857,229). A final dividend of 10 per cent is recommended on the ordinary stock making a total of 15 per cent for the year (same).

British Standard for Interchangeability of Bearings.—The revised British Standard publication for the dimensions of ball bearings and parallel-roller bearings, B.S.292:1958 (65 pp., 56 illustrations) relates to those features which control the interchangeability of bearings as units: it does not deal with their internal dimensions or detailed design. Dimensions are specified for single-row, angular contact, and double-row journal bearings; for rigid, parallel-roller, journal bearings; for snap-ring type ball journal bearings; for magnet bearings, and for single-thrust bearings with flat seatings and with spherical seating rings. Inch and metric sizes are provided up to 30 in. and 400 mm. bore, respectively. Tolerances on the external dimensions, diametral clearance, and permissible errors due to wobble and eccentricity are specified, as are fillets and shoulder heights for metric journal bearings. A standard nomenclature for the component parts is included, with the British Standard reference symbols for each type and size of bearing. Copies,



Re-decking in progress on the northern half of Nantwich Road Bridge over Crewe Station

price 12s. 6d., may be obtained from the British Standards Institution, 2, Park Street, London, W.1.

Jugoslavia and Bulgaria to Build Wagons for Hungary.—According to an announcement by the Hungarian Government last week, Jugoslavia and Bulgaria are to supply railway wagons to Hungary under trade agreements recently concluded.

Diesel Train Collides with Cattle.—Five cattle were killed when a multiple-unit diesel railcar from Tilbury to Pitsea, British Railways, Eastern Region, struck a herd which had strayed on to the line outside Tilbury last Tuesday. Several trains were cancelled and normal working on the line was held up for about 2 hr.

Public Transport Association Conference at Folkestone.—The Public Transport Association will hold its annual conference at Folkestone on May 12-14. Papers will be read by Mr. A. J. White, General Manager of Maidstone & District Motor Services Ltd., and by Mr. F. H. Clayton, Deputy General Manager of Liverpool Corporation Passenger Transport.

Westinghouse Brake & Signal Co. Ltd. Dividend Unchanged.—Westinghouse Brake & Signal Co. Ltd., has announced an unchanged 10 per cent dividend on its £7,109,424 one-class capital for the year ended September 27, 1958. Group profits were more than maintained at £2,704,709, against £2,694,095, but because of heavier depreciation charges the net profit balance, after tax, is lower at £879,235, compared with £906,351.

Morgan Crucible Co. Ltd. Interim Dividend.—The directors of the Morgan Crucible Co. Ltd. have announced an ordinary interim dividend of 5 per cent ($3\frac{1}{2}$ per cent), and have stated that the increase has the intention of achieving a more even distribution between the interim and final payments. For the first six months of the financial year ending March 31, 1959, group profits are not higher than in the previous year when there was a final dividend of $6\frac{1}{2}$ per cent.

Powder Metallurgy Joint Group.—The next meeting of the Powder Metallurgy Joint Group of the Iron & Steel Institute and the Institute of Metals has now been postponed from March 12 to April 29; the meeting will consist of the presentation and discussion of a series of papers on "Theoretical Aspects of Sintering." It will be held at Church House, Great Smith Street, Westminster, S.W.1, commencing at 9.30 a.m. Tickets are not required. In the evening there will be an informal conversation at the headquarters of the Institute of Metals, 17, Belgrave Square, London, S.W.1. Tickets will be restricted to members of the two Institutes and their guests.

Liège International Fair.—Railway material of all kinds, including locomotives, carriages, wagons, containers, permanent way material, signalling equipment, and brake equipment, will form the 10th Industrial Group at the Liège International Fair, to be held on April 15-May 10. The 12th Group consists of petrol and diesel engines, compressors, pumps, and so on, the 13th of machine tools, the 14th of light engineering accessories and the 15th of mechanical handling equipment. Group 16 is devoted to "machinery and heavy engineering," covering a wide range including steel-

making, wire-drawing, ventilation, and air-conditioning. Equipment for electric railways will be exhibited in the Industrial Electricity & Electronics Group (No. 17). The 18th Group is devoted to precision engineering, including rolling bearings, also measuring apparatus. In the metallurgy & Electricity Supplies Group (No. 20) will be shown, inter alia, fireproofing equipment, insulators, filters, paints and varnishes. The U.K. representative of the organisers is Mr. R. C. Liebman, 178, Fleet Street, London, E.C.4 (tel. City 5889).

John Summers & Sons Ltd. Expenditure.—The total group capital expenditure of John Summers & Sons Ltd. in the year ended September 27, 1958, was about £8,250,000, including £5,388,256 spent on the major development schemes at the Shotton works, the total expenditure on which has so far amounted to some £36,700,000. Because of further delays in the construction work, the board has stated that it will be impossible to complete the installation before early 1960.

Goods Wagons Derailed on London-Bedford Main Line.—All four main and local lines between St. Pancras and Bedford, British Railways, London Midland Region, were blocked for several hours last Tuesday when eight goods wagons were derailed at Wilshamstead, near Bedford. Three main-line trains from St. Pancras to Bradford, Leicester, and Manchester were cancelled, and passengers were advised to travel by trains from Euston and Kings Cross Stations.

Railwayman Cleared of Manslaughter Charge.—On the direction of Mr. Justice Finnemore, a jury at Hertfordshire Assizes last Tuesday returned a verdict of Not Guilty in the case of Albert Edward Roberts, a railway foreman. Roberts had been accused of the manslaughter of Michael Finiacane, a plate-layer, who was killed by a train while working on the line at Hadley Wood Station, British Railways, Eastern Region. The prosecution offered no evidence. Roberts had been committed for trial on a Coroner's warrant.

Greenock Princes Pier and Lynedoch Stations to be Closed.—The Scottish Region of British Railways has announced that, with the approval of the Transport Users' Consultative Committee for Scotland, that the passenger train service between Kilmacolm and Greenock Princes Pier will be withdrawn on February 2, 1959, and Greenock Princes Pier and Greenock Lynedoch passenger stations will be closed. Alternative rail facilities for passengers will be available at Greenock Central, Greenock West and Upper Greenock stations. Greenock Princes Pier Station will continue to be used for special trains in connection with transatlantic liner sailings. A revised passenger train service will operate between Glasgow St. Enoch and Kilmacolm, details of which will be available at the stations. A frequent bus service between Greenock, Kilmacolm, and Bridge of Weir is available. Parcels and other merchandise traffic by passenger train will be dealt with at Greenock Central Station. On February 2, 1959, Upper Port Glasgow goods depot will also be closed. Alternative rail facilities for freight train traffic will be available at Port Glasgow Goods, Inchgreen, or Kilmacolm stations for

freight train traffic previously dealt with at Upper Port Glasgow goods depot.

Closure of Gristhorpe Station.—British Railways, North Eastern Region, has announced that, because of the loss which is being incurred, Gristhorpe Station, on the Hull-Scarborough line, will be closed from February 16, 1959. Approval for this measure has been given by the Transport Users' Consultative Committee for the North Eastern Area. Alternative facilities for passengers are provided by the East Yorkshire Motor Services Limited and United Automobile Services Limited. Parcels traffic will be collected and delivered by British Railways' road motors operating from Filey. Small freight consignments will continue to be dealt with by British Railways' road motors based on Filey. Freight traffic in full wagon loads will be dealt with at Filey.

Conveyance of 96-ton Housings.—Eight roll housings, each weighing 96 tons, are being moved by British Railways from Sheffield to Port Talbot. These will be used in a new four-stand tandem rolling mill at Port Talbot, for rolling steel strips. Because of the weight and width, it has been necessary to split the load into two. The first set of housing which left the Darnall sidings of the manufacturers on January 11 was loaded on to 100-ton capacity wagons for Whetstone, Leicestershire, where it has been stabled before going forward to Port Talbot, to arrive on January 18. The speed is restricted to 25 m.p.h. The wagons will be returned empty to Darnall for loading the second part of the consignment, which will begin on January 21. This load will leave on January 25 for delivery on February 1. The housings were manufactured by Davy United Limited to the order of the Steel Company of Wales Limited.

Forthcoming Meetings

January 16 (Fri.).—Stephenson Locomotive Society, North Eastern Area, in the Demonstration Theatre, Northern Gas Board Showroom, 30, Grainger Street, Newcastle-on-Tyne, 1, at 7 p.m. A film show presented by British Railways.

January 16 (Fri.).—Railway Correspondence & Travel Society, London Branch, at the Railway Clearing House, Eversholt Street, London, N.W.1, at 7.15 p.m. Illustrated paper on "Austria, 1958," by Mr. J. B. C. McCann.

January 16 (Fri.).—Institute of Transport, South Wales & Monmouthshire Section, at the Royal Hotel, Cardiff, at 7.15 p.m. Paper on "Electrification of Crewe/Manchester railway," by Mr. P. Fisher.

January 17 (Sat.).—Stephenson Locomotive Society, North Eastern Area, at the Griffin Hotel, Bear Lane, Leeds, 1, at 6.30 p.m. Film show "Railway cine film shots throughout the British Isles, 1957," by Mr. W. A. Camwell.

January 17 (Sat.).—Stephenson Locomotive Society, North Western Area, in the Conference Room, Liverpool Central Station, at 7.30 p.m. An illustrated talk, "Narrow gauge miscellany," by Mr. P. B. Whitehouse.

January 20 (Tue.).—Institute of Transport, Visual aids meeting, at 80, Portland

Place, London, W.1, at 6.15 p.m. View and discussion of films—"Mishap," "Single line working," and "Time, space and effort."

January 20 (Tue.).—Institute of Transport, Sussex Group, at the Arlington Hotel, Brighton, at 6.30 p.m. Paper on "Application of electronic computers in transport," by a speaker from the British Tabulating Machine Co. Ltd.

January 20 (Tue.).—Institute of Transport, Swindon Group, at the Town Hall, Swindon, at 7.30 p.m. "Any questions."

January 21 (Wed.).—Railway Discussion Group, at the Peterborough Technical College, Eastfield Road, at 6.45 p.m. Paper on "Diesel and diesel-electric traction," by Mr. K. J. Cook, Chief Mechanical & Electrical Engineer, Eastern Region, Doncaster.

January 21 (Wed.).—Railway Students' Association, at the London School of Economics & Political Science, Houghton Street, London, W.C.2, at 6.15 p.m. Paper on "Choosing the medium—some problems confronting a Transport Manager," by Mr. H. A. Henderson, Transport Manager, Monsanto Chemicals Limited.

January 22 (Thu.).—Model Railway Club, at Caxton Hall, Westminster, S.W.1, at 7.45 p.m. Paper on "The Metropolitan Railway in its steam days," by Mr. K. Benest.

January 22 (Thu.).—British Railways, Western Region, London Lecture & Debating Society, in the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. Illustrated paper on "The distribution of bananas by railway," by Mr. E. R. Gooding, Passenger & Freight Manager, Elders & Fyfes Limited.

January 22 (Thu.).—Institute of Transport, Western Section, at the Docks Office, Bristol, at 7.30 p.m. Film display.

January 27 (Tue.).—Institution of Signal Engineers, Bristol Section, at Chippenham, at 6 p.m. Paper on "C.T.C. systems and possible applications," by Mr. J. P. Coley, Westinghouse Brake & Signal Co. Ltd., and Mr. A. Webster, British Railways, Western Region.

January 27 (Tue.).—Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, 1, Birdcage Walk, London, S.W.1, at 5.30 p.m. Three films.

January 27 (Tue.).—Railway Correspondence & Travel Society, East Midland Branch, at the N.C.S. Guild Room, Toll Street, Nottingham, at 7.30 p.m. Paper on "Locomotive and shed matters," by Mr. P. Bagguley.

January 28 (Wed.).—British Railways, London Midland Region, Lecture and Debating Society, at 5.45 p.m. Debate with British Railways, Southern Region, Lecture & Debating Society, at Chapter House, St. Thomas' Street, London, S.E.1—"That competition between the different forms of transport is a luxury the country cannot afford," Mr. H. C. Lang, Vice-President of the Southern Region Lecture & Debating Society, will be in the chair.

January 28 (Wed.).—Railway Discussion Group, at the Peterborough Technical College, Eastfield Road, at 6.45 p.m. Paper on "Traffic operation—Can it be worked studied?", by Mr. D. Bowick, Assistant, Work Study Section, Regional Establishment & Staff Officer, Liverpool Street.

February 2 (Mon.).—Institute of Transport, Metropolitan Section, at 80, Portland

Place, London, W.1, at 5.30 for 6 p.m. Paper on "Railway reorganisation and its purpose," by Mr. G. F. Fienness.

February 3 (Tue.).—Institution of Civil Engineers, at Great George Street, Westminster, S.W.1, at 5.30 p.m. Paper on "Preliminary planning for the new Tube railway across London."

Railway Stock Market

Foreign rails were slightly more active, but movements generally have been small. United of Havana second income stock remained at 6½ and the consolidated stock at 1¼ awaiting developments in Cuba. Chilean Northern first debentures changed hands up to 54½. Costa Rica ordinary stock was 13 and the 6½ per cent first debentures 74½, while Brazil Rail bonds strengthened to 7½.

Antofagasta ordinary and preference stocks remained at 12½ and 26½ respectively and the 5 per cent (Bolivia) debentures were quoted at 94½. San Paulo Railway 3s. units kept at 2s., while in other directions, Mexican Central bearer debentures were 72½. International of Central America common shares were quoted at \$26½ and the preferred stock at \$116.

West of India Portuguese capital stock rose further from 95 to 97½ with business recorded up to 99½. The 5 per cent debentures were 89½.

Nyasaland Railways ordinary shares maintained their rise to 14s. and the 3½ per cent debentures were 62½. Gedaref Railway & Development (Sudan) 5 per cent guaranteed debentures were quoted at 94.

Canadian Pacifics were well maintained at \$52 xd with the 4 per cent preference stock 55 and 4 per cent debentures 66. White Pass shares were \$14½.

The easier trend in the industrial section of the Stock Exchange has been reflected in shares of locomotive builders and engineers, which in some cases lost a few pence, but this was due almost entirely to less demand in evidence. Little selling has been reported. G. D. Peters shares, which remained firmly held, changed hands at 27s. 10½d., and Charles Roberts 5s. shares were again dealt in at a little over 10s. 9d. Beyer Peacock 5s. shares at 8s. 10½d. held almost all their recent improvement, but elsewhere, there was a recession in Westinghouse Brake from 46s. a week ago to 45s. Gloucester Wagon 10s. shares eased to 18s. 3d., but Wagon Repairs 5s. shares kept at 10s. 6½d. and Birmingham Wagon around 19s. though on the other hand, North British Locomotive eased from 14s. a week ago to 13s. 7½d. English Electric shares remained prominent, and at 59s. 3d. were "ex rights" to the new issue, which is expected to meet with a big response. Associated Electrical were 56s. 9d. and General Electric 38s. 6d. In other directions Dowty Group 10s. shares were 45s. 7½d. Pressed Steel 5s. shares 24s. 6d. and B.S.A. changed hands around 40s. British Aluminium were 82s. 3d. following the success of the Tube Investments- Reynolds take-over bid. Tube Investments shares were active around 75s. Elsewhere, Ruston & Hornsby at 25s. 6d. reflected some profit-taking following their recent rise, and T. W. Ward were less firm at 85s. 9d. British Timken held at 62s. 6d., and F. Perkins 10s. shares have been active around 12s. 6d. Ransomes & Marles 5s. shares were 16s. 9d.

OFFICIAL NOTICES

DEATH

WATKINS, JAMES WILLIAM, C.V.O., D.S.O., M.C., 23 Shepherds Road, Watford, suddenly on January 12 at home, beloved father of Joan, Margaret, and Elizabeth. (Funeral took place yesterday, Thursday, January 15, at Watford Parish Church. There were no flowers but donations in memoriam may be sent to the Railway Benevolent Institution, 30 Tavistock Square, London, W.C.1.) A memorial service will be held at St. Pancras Church, Euston Road, London, N.W.1, on Wednesday, January 21, at noon.

WANTED, EXPERIENCED RAILWAY SIGNALING ENGINEERS for development work, for service on the Continent. Applications in own handwriting (not with ballpoint), in confidence, with full details of experience, qualifications, and salary required to Box 740, *Railway Gazette*, 33, Tothill Street, London, S.W.1.

MOTORWAY and major Trunk Road improvements in the West Riding of Yorkshire. The County Council is undertaking on behalf of the Ministry of Transport and Civil Aviation the construction of the DONCASTER BY-PASS MOTORWAY and other major trunk road improvement schemes which will be carried out by contract. Applications are invited for road and bridge staff within the following salary ranges: RESIDENT ENGINEERS, for roads or bridges—maximum salary £1,515 p.a. (Grade "C") £1,295-£1,515. ASSISTANT RESIDENT ENGINEERS and technical staff for roads or bridges—maximum salary £1,175 p.a. (Grades APT. I to IV £575-£1,175). SUPERVISORS OF WORKS for roads or bridges—maximum salary £1,200 p.a. The appointments are temporary and the salaries are inclusive of all allowances for lodging, subsistence, travelling, etc. Candidates must have appropriate qualifications and experience and starting salary will be fixed within the ranges accordingly. Suitable candidates will be considered for transfer to the permanent staff as and when vacancies occur. The majority of the appointments are expected to be wholly on site work, but some may be wholly or partly at headquarters in Wakefield. Candidates having a preference for appointment at Wakefield should state this in their application. The appointments offer both design and practical experience in all aspects of modern road and bridge construction as it is expected that up to 50 miles of Motorway and improved trunk roads will be under construction within eighteen months, the first schemes being started within three months. Application forms from the County Engineer and Surveyor, County Hall, Wakefield, to be returned stating the grade applied for by 9th February, 1959.

The NIGERIAN RAILWAY CORPORATION invites applications for the following posts:—

- (a) MOTIVE POWER OFFICER
- (b) RUNNING SHED FOREMAN

Qualifications and Duties: Post (a): Candidates must have served an apprenticeship, graduateship or diploma course or pupillage with a Railway Company or locomotive manufacturers, with subsequent experience on a railway. Candidates should have had extensive experience in both utilisation and repair of locomotives and must have 5 years' experience in motive power organisation in the locomotive running section of a railway with knowledge of machine and repair shop methods and be capable of controlling staff and labour. Experience in Diesel maintenance and utilisation an advantage. Candidates must possess A.M.I.Mech.E. or A.M.I.E.E., or be graduates thereof. They would be responsible for assisting in the supervision of locomotive utilisation, failure, water and coal supplies lubrication and the employment of enginemmen.

Post (b): Candidates should have served a recognised apprenticeship, preferably in a Main Locomotive Workshop, or at a large Running Shed Workshop on a first class Railway. Subsequently they must have had at least 7 years' experience as a Fitter, Leading Hand or Chargeman in a Running Shed on a first-class Railway. They must be thoroughly acquainted with all branches of Running Shed fitting, and with periodical examinations of locomotives.

Salary: Post (a): In scale £1,100 by £50 per annum to £1,900 per annum.

Post (b): In scale £1,000 by £50 per annum to £1,500 per annum.

Both scales are inclusive of Overseas Pay. Starting salary according to qualifications and experience. Appointments may be on pensionable terms or on contract with a gratuity payable on completion of contract at the rate of £18 6s. 8d. to £31 13s. 4d. for Post (a) and £16 13s. 4d. to £25 0s. 0d. for Post (b) for each completed month of service.

Tours: 15 months in Nigeria followed by 15 weeks' leave on full pay.

Quarters: Partly furnished quarters are provided at low rental.

Allowances: There are attractive family, travelling, transport and other allowances.

Send postcard before 23rd January, 1959, mentioning the post and this paper for further particulars and application form, to:—

The London Representative,
Nigerian Railway Corporation,
Nigeria House, 9, Northumberland Avenue,
London, W.C.2.

